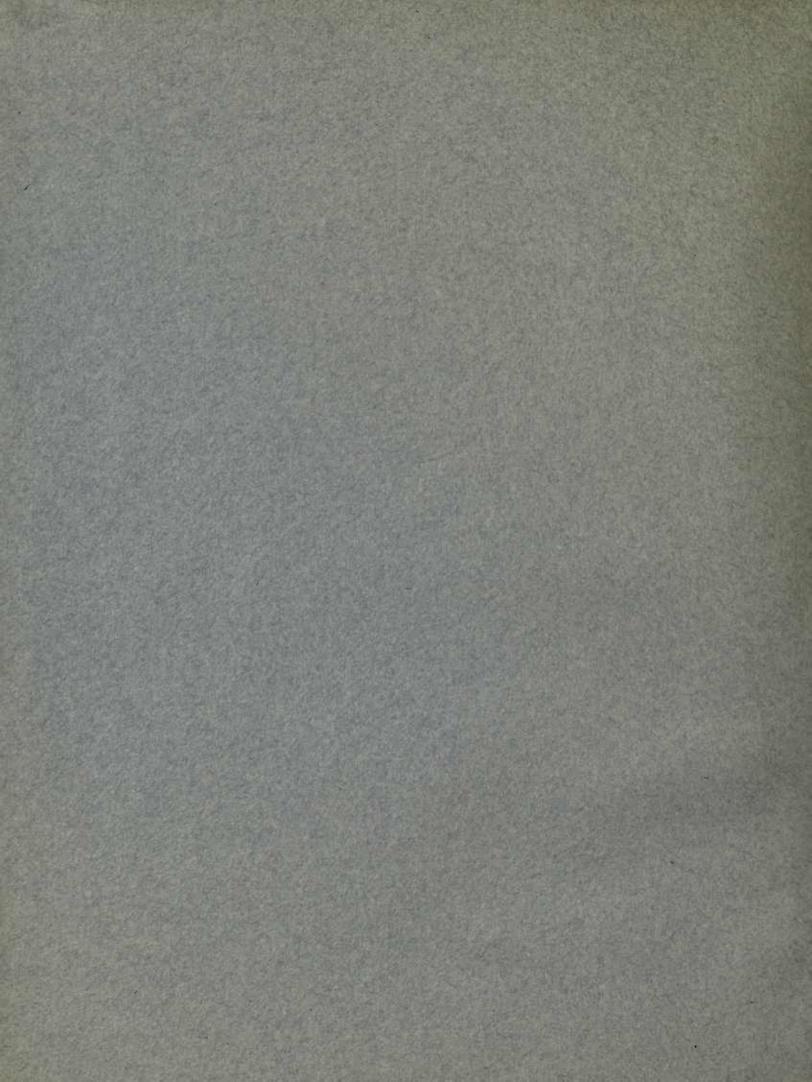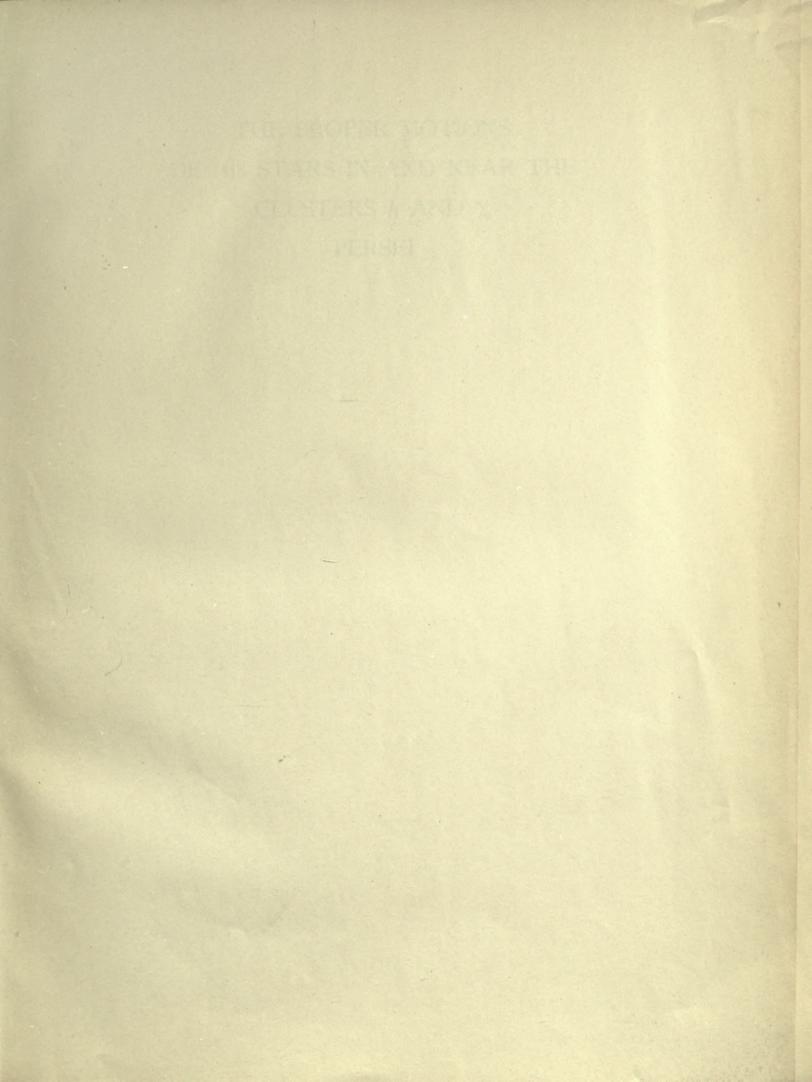# The Proper Motions
of 1418 Stars in and near the
clusters h and χ
Persei

by

A. van MAANEN

THE PROPER MOTIONS
OF 1418 STARS IN AND NEAR THE
CLUSTERS h AND χ
PERSEI

The Proper Motions
of 1418 Stars in and near the
clusters *h* and χ
Persei

Proefschrift

ter verkrijging van den graad van Doctor in de Wis- en Sterrekunde aan de Rijks-
Universiteit te Utrecht, op gezag van den Rector-Magnificus, Mr. D. SIMONS,
Hoogleeraar in de faculteit der Rechtsgeleerdheid, volgens
besluit van den Senaat der Universiteit tegen de
bedenkingen van de Faculteit der Wis- en
Natuurkunde te verdedigen op Vrijdag
2 Juni 1911, des namiddags te 4 uur,
door
ADRIAAN VAN MAANEN
GEBOREN TE SNEEK

AAN

MIJNE OUDERS

Wanneer ik, op het punt Utrecht te verlaten, mijn blik laat gaan langs de schare van hoogleeraren in de Faculteit der Wis- en Natuurkunde, dan zie ik met vreugde daaronder enkelen, die zich door hun onderwijs of door de mij bij meerdere gelegenheden betoonde belangstelling, eene blijvende plaats in mijne herinnering hebben verzekerd. Ik wil hier niet in bijzonderheden treden en slechts eene uitzondering maken voor U, Hooggeleerde NIJLAND, *mijn Promotor.*

Menig jaar heb ik onder uwe leiding gewerkt en veel van U geleerd. Uwe mij zoo veelvuldig betoonde hulpvaardigheid stel ik op hoogen prijs; vooral in den laatsten tijd kwam ik U bijna dagelijks met mijne vragen en tallooze bezwaren lastig vallen; steeds vond ik U bereid mij te helpen. Dat gij dit proefschrift hebt waardig gekeurd om weldra te verschijnen als een deel der annalen van Uw Observatorium, is mij hoogst aangenaam.

Dat de herinnering aan den op „Zonnenburg" doorgebrachten tijd tot de aangenaamste zullen behooren, die ik uit Utrecht medeneem, is voor een groot deel ook aan U te danken, waarde VAN DER BILT; *moge de goede verstandhouding, die reeds zoo menig jaar tusschen ons heeft bestaan, van blijvenden aard zijn.*

De hulp, mij door U, waarde BLOKHUIS, *verleend, heb ik dankbaar aanvaard; de vertaling kon moeilijk in beter handen zijn terecht gekomen; de belangeloosheid, waarmede Gij die taak op U hebt genomen, maakt het mij moeilijk mijn dank daarvoor op deze plaats in woorden te brengen.*

Hooggeleerde J. C. KAPTEYN. *Uw laboratorium te Groningen en Uw huis hebt gij voor mij opengesteld; niet alleen heb ik van U veel geleerd, neen, gij hebt mij de wetenschap doen lief krijgen; de hartelijkheid, die Gij mij steeds hebt betoond, vat ik op als het bewijs van eene vriendschap, welker weldadigen invloed ik steeds meer heb ondervonden; moge ik die nimmer onwaardig blijken te zijn.*

CONTENTS

CONTENTS

INTRODUCTION.

When on suggestion of Professor J. C. KAPTEYN of Groningen, I undertook in June 1908 the measurement and reduction of some photographic plates of the star-clusters h and χ Persei, in order to determine the proper motions of a number of stars in this region, I had a twofold object in view.

Firstly I wanted to try and find the P. M. of the two clusters themselves.

Secondly I wished to determine the frequency of the P. M. according to its amount and to the magnitudes of the stars for this region of the sky, the stars belonging to h and χ Persei being of course left out of account.

It would have been impossible to accomplish this task without the help of several astronomers who all assisted me in the kindest way. I wish to express my sincere thanks to:

Professor ANDERS DONNER of Helsingfors and Dr. S. KOSTINSKY of Pulkovo for the great number of plates, taken with the greatest possible interval, which they put at my disposal;

Professor E. F. VAN DE SANDE BAKHUYZEN of Leyden and Professor KÜSTNER of Bonn who were so kind to furnish me with the most recent meridian observations of some twelve stars, to be used as fundamental stars;

Dr. J. H. ZWIERS and Mr. J. VÔUTE of Leyden and Dr. C. MÖNNICH-MEYER of Bonn who took much pains in making these observations;

2

Professor A. Auwers of Berlin who had the kindness to procure Prof. Kapteyn all the earlier observations of these stars, reduced to the equinox 1875,0;

Professor J. C. Kapteyn of Groningen for the interest he has continually taken in my work, for the advice he gave me on many occasions and particularly for the many marks of friendship I have received from him during these last three years;

Professor A. A. Nijland of this observatory who not only during the preparation of this paper assisted me with his valuable advice, but who moreover determined the brightness of some faint stars which I needed so much;

Mr. K. Blokhuis of the Gasworks at Haarlem for translating my paper into English and for translating a Russian paper, bearing on my subject.

CHAPTER I.

OBJECT OF THE INVESTIGATION.

It has already been remarked in the introduction that the object of the present paper is a twofold one.

In the first place I wished to try and settle which stars do and which do not belong to the clusters h and χ Persei. It is obvious that this may be decided by accurate determinations of the proper motions. This has been done for two other star-clusters, namely the Pleiades and the Hyades. In the former case the P. M. afford a very good method, as NEWCOMB says, „of distinguishing between a star which belongs to the cluster and one which probably lies beyond it. The amount of the proper motion is about 7″ per century. The first accurate measures made on the relative positions of the stars of the cluster were those of BESSEL, about 1830. In recent years several observers have made yet more accurate determinations. The most thorough recent discussion is by ELKIN [1]). One result of his work is that there is as yet no certain evidence of any relative motion among the stars of the group. They all move on together with their common motion of 7″ per century, as if they were a single mass."

For the Hyades the P. M. have been determined photographically [2]). The plates were taken by DONNER, measured and discussed by KAPTEYN and DE SITTER. The adopted final motion of the group is

$$\mu_\alpha = + \, 0''.090$$
$$\mu_\delta = - \, 0''.025.$$

---

[1]) Transactions of the Astr. Obs. of Yale University **1.**
[2]) Publ. of the Astr. Lab. at Groningen, **14.**

The question which stars were members of the groups h and χ Persei became doubly important after the publication of: Parallaxes of the clusters h and χ Persei, measured and discussed by Prof. J. C. KAPTEYN and W. DE SITTER Sc. D. [1]. Although a definite conclusion as to a parallax of the two clusters was not arrived at, yet DE SITTER remarked on page 34:

„In conclusion attention may be drawn to the fact that the foregoing discussion affords the material from which the parallaxes of the clusters h and χ Persei relative to the surrounding stars may be derived with extreme accuracy, as soon as we shall be able by a discussion of the proper motions to decide with certainty for each of the stars of the plates, whether it belongs to either of these clusters or not."

Hence if we could arrive at positive results about the P.M., this would imply the answer to the important question what position both clusters occupy in space.

In the second place it is possible for this part of the sky to determine the frequency of the P. M. according to magnitude and to the amount of P. M. Material of this kind is unfortunately somewhat scarce as yet. To be sure KAPTEYN has given tables for this [2] and we also possess the data of W. G. THACKERAY [3], but in either case only stars of greater brightness than mag. 9.5 are dealt with. For fainter stars the distribution has until now only been determined by TURNER in „Three notes on the number of faint stars with large proper motions" [4]. TURNER goes as far as mag. 12.0, but by the rather rough methods adopted he only gives proper motions exceeding $0''.20$ and $0''.15$ annually. I hoped that the method followed by me would allow me to advance further in both respects. My plates contained stars down to mag. 14.0 and the accuracy reached allowed me to go as far as $0''.010$ annually. Already *a priori* I could expect a fairly high accuracy, so that it might be anticipated that the work would not be undertaken in vain. For, the best of the already

[1] Publ. of the Astr. Lab. at Groningen **10.**
[2] Publ. of the Astr. Lab. at Groningen **11.**
[3] Monthly Notices of the R.A.S. **67**, 145.
[4] Monthly Notices of the R.A.S. **69**, 57, **69**, 491, **71**, 45.

available maesurements of the plates for the Carte du Ciel gave $\pm\ 0''.237$ as mean error of one coordinate.

If in order to obtain proper motions new plates are taken after some time, the change of one of the coordinates will be determined with a mean error of $\pm\ 0''.237\ \sqrt{2} = \pm\ 0''.334$.

This gives for plates taken with an interval of 12 years, in the P. M. both in α and δ, a mean error of $\pm\ 0''.028$.

If we have, as in our case, one pair of plates with an interval of 17 years and 2 pairs with a 12 years' interval, we might expect, even starting from such *absolute* measurements, in our final results a mean error of $\pm\ 0''.014$.

That with the differential method, followed by me, this accuracy has certainly been surpassed, is fully proved by the results. I shall extensively discuss this point in Chapter XI.

The labour involved in an accurate determination of the P. M. is of course very considerable. Hence it is impossible to determine the frequency for so many parts of the sky as could be done by TURNER's method. And the distribution extending over a small part of the sky has in itself little value. However, similar data of equal accuracy may within a reasonable time be expected in addition to my plates and then the obtained results will be helpful in the solution of the problems, arising in the investigation of the structure of the stellar universe.

CHAPTER II.

THE MATERIAL.

In the Astronomical Laboratory at Groningen, where I did the measurements and part of the reductions, in the spring of 1909 seven photographic plates of h and χ Persei were available, taken by KOSTINSKY at Pulkovo partly in 1896, partly in 1908. After KOSTINSKY had used them for a paper

on the use of the stereocomparator for the determination of proper motions [1])
he had ceded them to Prof. KAPTEYN, authorising him to measure them and
to publish the results.

The existence was also known of two plates of the same region of the
sky, taken in 1890 and 1892 by DONNER at Helsingfors and measured by Miss
BRONSKY and Miss STEBNITZKY[2]). At my request Prof. DONNER was so kind not
only to lend me these plates, but he moreover promised to take an additional
number of photographs of h and χ Persei in 1909. So I finally possessed the
following plates:

Designa-tion	Epoch	Time of expos-ure	Hour angle at the middle of exposure	Central object	Observer	Remarks
A, 103	1896, Sept. 22	30^m	$- \ 0^h \ 14^m$	h Persei	Kostinsky	very good images
A, 106	1896, Oct. 1	30	$+ \ 0 \ 39$	h ,,	Kostinsky	good images
A, 115	1896, Oct. 9	60	$+ \ 0 \ 1$	χ ,,	Kostinsky	very good images
B, 126	1908, Oct. 22	20	$- \ 0 \ 54$	χ ,,	Kostinsky	fairly good images
B, 132	1908, Oct. 24	20	$- \ 0 \ 16$	h ,,	Kostinsky	good images
B, 136	1908, Oct. 31	30	$+ \ 0 \ 12$	h ,,	Kostinsky	very good images
B, 147	1908, Dec. 28	50	$- \ 0 \ 1$	h ,,	Kostinsky	indifferent images
2	1890, Sept. 5	15	$- \ 4 \ 36$	h ,,	Dreijer	bad images
4	1892, Sept. 20	20	$- \ 2 \ 17$	h ,,	Dreijer	very good images
7	1895, Apr. 17	10		h ,,	Dreijer	
10	1895, Apr. 17	5		h ,,	Dreijer	
2	1896, Aug. 18	60	$- \ 2 \ 45$	h ,,	Sundman & Donner	fairly good images
8	1909, Sept. 10	60	$- \ 2 \ 50$	h ,,	Donner	good images
4	1909, Sept. 13	12	$- \ 4 \ 36$	h ,,	Donner	good images
1	1909, Sept. 14	15	$- \ 2 \ 18$	h ,,	Donner	good images
9	1909, Sept. 15	15	$- \ 2 \ 17$	h ,,	Iversen	very good images

---

[1]) Bull. de l'Acad. de St. Pétersbourg, 1908, VIe Série, N°. 17.
[2]) Mém. de l'Acad. Imper. des Sc. de St. Pétersbourg VIIIe serie 2, No. 7.

Nos. 7 and 10 had been taken at lower culmination and hence had to be discarded. Unfortunately all the remaining material could not be worked up. I therefore selected six plates, all containing good images in approximately equal numbers and having h Persei at the centre. These were the following:

by KOSTINSKY: A 103 and A 106 of 1896
B 132 and B 136 of 1908.

by DONNER: No. 4 of 1892.
No. 9 of 1909.

I originally intended also to investigate a couple of plates with an hour's exposure, but for this the necessary time lacked. Such plates might be a valuable contribution towards answering the question whether the stars of a cluster range through a scale of brightness as wide as the stars in general. If the clusters h and χ Persei had a large proper motion, which will presently appear not to be the case, it would certainly repay the trouble, with a view to this question, to scrutinise the plates with a long time of exposure in regard to P. M. But even in our case some results might be obtained by countings, as was done for the Pleiades by Bailey, for the cluster in Coma Berenices and for Praesepe by NEWCOMB [1]). Possibly I shall later have an opportunity to do this.

After the measurements and reductions had been quite finished, I discovered that still two older photographs of the clusters h and χ existed. The first of these was taken by the brothers HENRY in 1884. A reproduction of it is found in Sirius, **18,** 256. When comparing this reproduction, which is stated to be a direct reproduction of the photograph without any retouching [2]), with copies of DONNER's plates of 1892 and 1909, I found such a large number of deviations, however, from these mutually well according plates, that I must doubt the correctness either of HENRY's plate, which is one of their oldest photographs or of the reproduction.

It is also doubtful whether I should have been able to obtain a second

---

[1]) The Stars, a study of the Universe, 1904, p. 258 seq.
[2]) Cf. Sirius, **18,** 210.

plate, taken with the same apparatus in recent years. Yet this would have been desirable in order to obtain great accuracy in the determination of the P. M.

The second one of the plates mentioned, is by ROBERTS and was taken in 1890. [1]. The time of exposure was three hours and by this circumstance alone it differed too much from the plates measured by me, so that it could not have been of great service in the determination of the P. M.

CHAPTER III.

EXPLANATION OF THE METHOD OF MEASURING.

Until now for the photographic determination of P. M., plates have mostly been used containing the images of both epochs. I have to explain why this method was abandoned.

The method applied by KAPTEYN and DE SITTER in the publications of the Astronomical Laboratory at Groningen has in comparison with my method four advantages and one disadvantage.

The first advantage is that the observations are the direct difference in distance of the two positions of the same star at different times, whereas in my method each star has to be made to coincide with a scale-division of the measuring apparatus. The consequence of this is that in the numbers, yielding by reduction the P. M., to the unavoidable error of pointing on the star, the error of setting on the scale-divisions is added twice. But this error is so small that the chief point is the saving of time since the number, yielding in KAPTEYN's method the P. M. directly by reduction, is obtained from no less than four numbers with my method.

More important is the second advantage, viz. the small influence of a distortion of the sensitive layer in the method followed by KAPTEYN and DE SITTER, if only the images of different epochs are in close proximity. The

---

[1] Phot. of Stars, Star Clusters and Nebulae, 1893.

result, however, of many measurements by both, has completely confirmed the opinion already expressed in Publ. of the Astr. Lab. at Groningen 1, that a distortion of the film does not exist. And this holds not only for the differential distortion, but generally. For those who fully accept this result the second advantage consequently vanishes.

Thirdly, if the plate is not accurately plane, this fault will affect my measures in an uncontrollable way.

As to a fourth error, viz. a possible minute instability of the plate as fixed in the maesuring apparatus, I shall treat of this in Chapter IV.

On the other hand the method followed until now has a great drawback. It seems to be difficult to keep the undeveloped plates for more than 6 or 8 years[1]) and this would limit the interval for the determination of P. M. to this maximum. A developed plate on the contrary may be kept for an indefinite time and be compared with a later photograph, at any rate if no distortion takes place. So in the present case the difference of epoch is with KOSTINSKY's plates 12 years, with DONNER's 17. And this is an essential advantage for the determination of P. M., since the accuracy of the P. M. is proportional to this difference.

The systematic errors, depending on the position on the plate, which will be extensively dealt with in Chapter VIII seem to justify the opinion, that also in the plates used by me there is no question of a distortion of the film, at any rate that it is too small to have an appreciable influence on the P. M. itself, as long as stars are concerned at a distance of no more than 40′ from the centre. For stars nearer the edge we are not justified rigorously to maintain this statement. I am of opinion, that in deriving proper motions photographically it will in general be safe not to consider stars, lying near the edge of the plates. If we exclude the marginal stars, the advantage of the method here followed very probably outweighs the advantages of the older method.

---

[1]) Cf. Publ. of the Astr. Lab. at Groningen, **19**, X.

CHAPTER IV.

The apparatus and measurements.

The measuring apparatus of the Groningen laboratory which I used needs no special description, since it is identical with the instrument of which H. G. van de Sande Bakhuyzen gave a detailed account in the Bulletin de la Carte du Ciel, 1, 169—173, with the only difference that it was mounted at an inclination of 45°.

Concerning the periodic and progressive errors of the screw I refer to Publ. of the Astr. Lab. at Groningen 1. These errors appeared not to be so large that they could not be explained by errors of observation and even if they had been real, their influence on the final results is so much reduced that they can have no sensible influence on the P. M. Since for the measurements in α and δ each star was always made to correspond to the same scale-division on all six plates, also systematic or accidental errors of the scale could not have any influence on the final results. Besides, the progressive errors of the screw are entirely eliminated by this process, since for any particular star always the same part of the screw was used and consequently these errors could only affect the difference of the readings of the same star on two plates amounting *in maximo* to 0″.852.

The influence of a possible dead run of the screw was avoided by always turning it in the same direction.

The instrument was as far as possible covered by a case of thick cardboard in order to preclude the effect of radiation from the observer's body on its parts.

Before and after each series of measurements the run of the screw was determined by measuring the interval between two successive scale-divisions; for this purpose the divisions 300 and 301 were chosen. The deviations of the individual values from their mean lay without exception within the probable measuring errors, so that in no case a correction for a changed value of a part of the screw had to be applied.

In order to discover whether the plate shifted while being measured in

one position, which operation occupied from 8 to 19 days, the distance between a sharply defined point on the plate and the nearest scale-division was measured at least three times during each series of measurements.

In order to detect a possible rotation of the plate with respect to the apparatus, before and after each series of measurements the distances of the four most suitable stars from the nearest scale-divisions were measured. These stars should not lie too near the edge, as their images had to be sharp; on the other hand, in order to reveal any rotation they had to lie as far as possible from the centre of the plate and preferably symmetrically to it. The following stars were chosen:

No.	x	y
128	260'.5	66'.6
254	266 .7	136 .6
1401	344 .2	66 .7
1421	333 .4	132 .4

In the first column the number of the star in the tables is given, in the second and third their positions on the plate in rectangular coordinates. It should be mentioned that the centre of the plate lay near $x = 300.0$, $y = 100.0$.

The result was that neither a shifting nor a rotation manifested itself of such an amount that the discrepancies should not rather be attributed to accidental measuring errors than to a real displacement of the plate. Hence no corrections were applied for it.

That no corrections for a real shifting were necessary, appeared also from the following consideration. The twelve fundamental stars already chosen at the outset were measured 3 or 4 times in each position of the plate, each star being pointed at at least three times; the comparison of the measurements of the individual stars yielded a mean error of 0".0164 on the average. If the necessary corrections for an assumed shifting are taken into account, this

m. e. works out at $0''.0160$. The difference is so small that the corrections for shifting are undoubtedly unreal.

Two settings were always made on the remaining stars and also on the scale-divisions. I shall return to the error of pointing when discussing the mean error in Chapter XI.

The measurements were all made with daylight, reflected towards the plate by a horizontal mirror. On the average 200 stars were measured daily in one position of the plate. Only during the winter months this number could not be reached owing to early twilight. It would have been possible to work with artificial light then, but I feared that this might introduce a systematic error in the readings, which has now been completely avoided.

The plates were measured in two positions, with East at the left and with North at the left. By means of two pairs of stars, each differing little in δ and much in α, the plates were mounted as nearly as possible according to the parallel of 1900.0. For the second position the orientation was obtained by turning the plate through 90° by means of the circle of position.

Since the readings of the micrometer screw increase when the vertical wire of the micrometer is moved from left to right (i. e. with decreasing α and decreasing δ), we get, after applying the necessary corrections which will be discussed in the following chapters, calling the star-readings at the first epoch 1 and at the second 2:

$$\text{Pos. I: } (1-2)_\alpha = \text{P. M. in } \alpha \text{ (great circle);}$$
$$\text{Pos. II: } (1-2)_\delta = \text{P. M. in } \delta.$$

Other observers usually execute the measurements in four positions by also turning the plate 180° and 270°; this is done in differential measurements in order to eliminate the personal error depending on the size of the images. In my opinion, however, this error is still better eliminated not by measuring the same plate twice, but by taking two different plates. So I did not hesitate to give up the measurement in four positions and to measure instead as many plates as possible in two positions.

The six plates that were enumerated above, were combined in the following three sets:

$$A \ 106 - B \ 132, \ \text{Interval} \ 12^y.063,$$
$$A \ 103 - B \ 136, \ \quad \ ,, \quad \ 12^y.107,$$
$$\text{DONNER} \ 4. \ 1892 - \text{DONNER} \ 9. \ 1909, \ \text{Interval} \ 16^y.984.$$

The values $(1-2)_\alpha$ and $(1-2)_\delta$ are given for these pairs in the tables under the headings $\dfrac{\alpha}{M_1 \ M_2 \ M_3}$ respectively $\dfrac{\delta}{M_1 \ M_2 \ M_3}$.

CHAPTER V.

THE METHOD OF REDUCING.

In order to derive the P. M. from the differences M, found in the preceding chapter the principle was applied, explained by KAPTEYN in the ,,Plan of selected areas" with this difference that also the quadratic terms were taken into account. If m''_α and m''_δ are the components of the annual P. M. of a star and Q the factor, reducing the P. M. over the interval between the two epochs and expressed in $1'$ as unit, to the annual P. M. in $1''$ as unit, we may assume

$$m''_\alpha = [M_\alpha - a - bx - cy - dx^2 - exy - fy^2] \ Q,$$
$$m''_\delta = [M_\delta - a' - b'x - c'y - d'x^2 - e'xy - f'y^2] \ Q.$$

It is evident that in whatever way the twelve constants of these formulae are determined (Q is determined separately) the application of these corrections to M involves corrections for:

shifting of the plates inter se,
rotation of the plates inter se,
alteration of the scale value,
differential refraction,
,,   precession and nutation,
,,   aberration,
the reduction of x and y to α and δ,
the inclination of the plates when taken and when measured

Higher terms than those of the second degree with respect to a fixed point, *in casu* the point where the readings of the scale of the measuring instrument were $x = 300.0$ and $y = 100.0$ are disregarded. The formulae for these corrections which must be applied, whenever photographic platesare measured, are fully dealt with e. g. in the Bulletin du Comm. Int. Perm. pour l'exécution phot. de la Carte du Ciel. So it would be superfluous to enter further upon this subject here.

In order to determine my constants, I started from the assumption, as KAPTEYN puts it: „that, for the very faint stars on the plate (after having excluded those which by a first reduction appear to have a very sensible p. m.), the mean proper motion both in α and δ *is the same over the whole of the plate*. Starting from this supposition, the whole of these faint stars will at once furnish us with very reliable values of the constants b c d e f b' c' d' e' f'. The two remaining ones (a and a') shall be derived from the standard proper motions determined at the meridian instrument".

Before proceeding to this determination I want to explain, why I adopted a differential method for determining the P. M.

An absolute method has the advantage that each observation can directly be used for determining the P. M. after other plates, taken at a later date, have been reduced. In my case I might have computed α and δ for each star for:

1892.7; 1896.7; 1896.8; 1908.8; 1908.8 and 1909.7.

In order to determine from these the position α, δ for the epoch 1900.0 and the P. M. I might have combined these epochs into three sets e. g. 1892.7, 1896.8 and 1909.1 and for each star the following equations would then have been obtained:

$$\alpha - 7.3 \; \mu_\alpha = \ldots\ldots\ldots\ldots\ldots\ldots$$
$$\alpha - 3.2 \; \mu_\alpha = \ldots\ldots\ldots\ldots\ldots\ldots$$
$$\alpha + 9.1 \; \mu_\alpha = \ldots\ldots\ldots\ldots\ldots\ldots$$

and a similar set for δ and μ_δ. By the method of least squares I could have determined from these equations α, δ, μ_α and μ_δ for 1900.0. Later observations could easily have been linked to these.

But in order to obtain the second members of the above equations we should have had to apply to the measurements the following corrections:

1. corr. for the systematic and accidental errors in the scale-divisions of the measuring instrument;

2. corr. for the progressive errors of the micrometer screw;

3. corr. for the periodic errors of the micrometer screw;

4. corr. for the curvature of the cylinder of the measuring instrument;

5. corr. for the tilting error (occasioned by turning the microscope round a cylindrical horizontal axis from star to scale);

6. corr. for the inclination of the plate relative to the optical axis of the microscope;

7. corr. for the inclination of the plate relative to the optical axis of the refractor;

8. corr. for an erroneous value of a scale-division;

9. corr. for the reduction of x and y tot α and δ;

10. corr. for refraction;

11. corr. for aberration;

12. corr. for precession and nutation;

13. corr. for an erroneous orientation of the plates.

Corr. 1 is usually obviated by referring the star to the preceding and following scale-division and by moreover measuring the plate in 4 positions. The labour of measuring is thereby a little more than doubled.

Corr. 2, 3, 4, 5 and 6 are usually small if a good instrument is used and so may either be disregarded or easily taken into account. The measuring instrument has beforehand to be closely examined in regard to these errors.

In corr. 11 the terms of the second degree may as a rule be neglected.

Corr. 12 and 13 may be combined to a single one.

Corr. 7 cannot be applied in most cases since the inclination of the photographic plate to the optical axis of the refractor is seldom determined and depends among other things on the flexure. That it may reach such a value that it must not be neglected in the determination of P. M., has already more than once been noticed and is again confirmed by my measurements.

Summing up it is clear that the absolute method requires much more labour than the differential one.

As to the accuracy which may be reached it already appeared in Chapter I, that with the absolute method, using six plates, as I did, a mean error in each of the coordinates of the P. M. may be expected of $\pm$ 0″.014. This holds for the Carte du Ciel plates (from Potsdam and Paris); each P. M. thus obtained requires for the Potsdam plates 36 settings, for the Paris plates 48.

The result of my measurements is a mean error in the proper motion of $\pm$ 0″.008 in each coordinate. And this P. M. was obtained from 24 settings, two on the star in each plate, two on the scale-division.

In this respect KAPTEYN's method is a little easier still, giving a m. e. of 0″.010 with 12 settings. It is questionable, however, whether my m. e. would have become $\sqrt{2}$ as large, namely 0″.011, if I had only once set on star and line, since the error of pointing is not the only cause of the m. e. of the P. M.

Now, since with the differential method not only all sources of errors, so far as they are functions of the 0th, 1st and 2nd powers of the star-coordinates, are taken into account even such as are at present unknown; but since also with less labour a higher degree of accuracy is reached, the method I followed is, in my opinion, fully justified.

If later photographs of the same region of the sky will have to be compared with the plates I used, it will still be possible, availing ourselves of KAPTEYN's investigation on the measuring instrument used, to derive α and δ from my measurements. But the differential method would then require the utmost precautions and it is even questionable whether the errors of the measuring instrument may be regarded as constant in the long run and if this cannot be stated with certainty, it is absoluty necessary to remeasure my plates if one wishes to use an accurate differential method.

CHAPTER VI.

THE EQUATIONS OF CONDITION.

The stars that may serve for the determination of the twelve constants a b c d e f a′ b′ c′ d′ e′ f′ have to satisfy various conditions. The assumption from which we started on page 14, that the mean proper motion both in α and δ is the same over the whole plate, is only allowed for faint stars, since with these a possible difference in the parallactic proper motion can only exist to a very small extent. For this reason the brighter stars must be rejected at once. But in our case also the stars, belonging to the groups h or χ had obviously to be dicarded. Besides, the stars with large P. M. might have an undue influence in the determination of the constants, so that these also had to be avoided.

As the magnitudes themselves had not yet been determined, this first condition was settled by means of the diameters; all stars having a diameter over 0″.900 were rejected. It appeared later that this maximum diameter corresponds to mag. 10.5. The only way for excluding the stars belonging to the groups h and χ Persei was to determine the extent of the clusters by counting the number of stars in different parts of the plate. Since it is more-over desirable to distribute the stars, serving for the determination of the constants, as symmetrically as possible, all stars had to be excluded, whose distance from the centre of the plate are less than 32′.5.

Also stars near the edge could not be used for determining the constants, since it could not be settled a priori what weight had to be given to the equations of condition furnished by them, while it might be assumed that this weight is the same for all the other stars. Hence I left out all stars, lying at more than 52′.0 from the centre of the plate.

In order to exclude the stars with large proper motions, which were not known a priori, a number of simplified equations of condition, containing only the constants a b c a′ b′ c′, were formed and solved. The P. M. so obtained for the pair of plates A 106—B 132 indicated which stars it would be

desirable to drop in the final determination of the constants on account of their large proper motions. The limit for this rejection I drew at a P. M. of $0''.050$ annually in one of the coordinates. Finally I rejected all stars which had not been measured on one or more of the plates or had received a mark of uncertainty. This gave the advantage that for all pairs of plates, as well in α as in δ the coefficients of the unknown quantities were the same in the conditional and hence in the normal equations. Otherwise the labour of computation which was very considerable as it was would have been greatly increased.

With all these restrictions 210 stars were left. The following table contains their numbers in the final tables.

51	103	157	255	437	591	897	1209	1338	1402
52	105	159	263	438	602	898	1211	1339	1403
53	108	160	265	439	603	910	1216	1351	1405
54	109	164	266	441	605	1022	1223	1354	1409
55	111	165	267	443	607	1023	1225	1355	1410
56	131	166	268	444	648	1025	1226	1359	1411
59	132	167	269	445	649	1028	1263	1360	1414
60	134	168	270	459	650	1045	1265	1361	1418
64	136	169	272	462	654	1050	1266	1362	1419
65	137	171	321	464	668	1051	1267	1364	1422
70	138	172	322	465	669	1114	1268	1374	1423
85	139	173	324	466	670	1117	1270	1375	1438
86	141	174	325	467	672	1118	1277	1376	1439
88	143	186	328	532	673	1119	1291	1377	1440
91	145	190	336	533	747	1120	1294	1378	1442
93	146	191	337	535	748	1122	1296	1379	1445
94	148	192	338	536	765	1123	1300	1380	1447
97	149	246	339	538	766	1127	1327	1382	1454
98	151	248	340	539	892	1140	1329	1383	1479
100	152	249	343	550	895	1142	1330	1385	1481
101	156	254	435	589	896	1146	1335	1386	1482

Starting from the assumption that for these stars the mean proper motion is the same all over the plate and denoting this in α and δ by $\Delta \mu_\alpha$ and

$\Delta \mu_\delta$ each star furnishes a pair of equations of the form:

$$\Delta \mu_\alpha = (M_\alpha - a - bx - cy - dx^2 - exy - fy^2)\ Q,$$
$$\Delta \mu_\delta = (M_\delta - a' - b'x - c'y - d'x^2 - e'xy - f'y^2)\ Q.$$

In practice $\Delta \mu_\alpha$ and $\Delta \mu_\delta$ cannot be separated from the constants Qa and Qa' and are combined with them. The constant Q is calculated separately. When the constants have been determined we find for each star the components m''_α and m''_δ of the P. M. from the formulae:

$$m''_\alpha = (M_\alpha - a - bx - cy - dx^2 - exy - fy^2)\ Q.$$
$$m''_\delta = (M_\delta - a' - b'x - c \cdot y - d'x^2 - e'xy - f'y^2)\ Q.$$

To the relative P. M. found in this way the corrections $\Delta \mu''_\alpha$ and $\Delta \mu''_\delta$, deduced from some twelve fundamental stars, have to be applied, by which the absolute P. M. are obtained.

CHAPTER VII.

The normal equations and their solution.

In order to obtain the conditional and normal equations the rectangular coordinates which in surveying the plate had been found in $0^p.1$, p being very nearly equal to $1'$, were expressed in degrees by means of tables I had at my disposal in the Astronomical Laboratory at Groningen. These tables give two decimals. In the same way x^2, y^2 and xy were determined for all 1418 stars and besides x^3, x^4, y^3, y^4, xy^2, x^2y, x^2y^2, x^3y, xy^3 for the 210 stars, furnishing the equations of condition for the determination of the constants a b c d e f a' b' c' d' e' f'.

Since M_α and M_δ never contain more than three figures (Cf. p. 10) and the above mentioned coefficients were only in exceptional cases greater than 1.00, it was always possible to use multiplication tables for making up the normal equations.

It has already been stated in the preceding paragraph that for all three pairs of plates the same stars have been used as well in α as in δ; the consequence of this is that in the normal equations

$$[1 \ .1] \ a + [1 \ .x] \ b + [1 \ .y] \ c + [1 \ .x^2] \ d + [1 \ .xy] \ e + [1 \ .y^2] \ f = [1 \ .M]$$
$$[x \ .1] \ a + [x \ .x] \ b + [x \ .y] \ c + [x \ ..x^2] \ d + [x \ .xy] \ e + [x \ .y^2] \ f = [x \ .M]$$
$$[y \ .1] \ a + [y \ .x] \ b + [y \ .y] \ c + [y \ .x^2] \ d + [y \ .xy] \ e + [y \ .y^2] \ f = [y \ .M]$$
$$[x^2 \ .1] \ a + [x^2 \ .x] \ b + [x^2 \ .y] \ c + [x^2 \ .x^2] \ d + [x^2 \ .xy] \ e + [x^2 \ .y^2] \ f = [x^2 \ .M]$$
$$[xy.1] \ a + [xy.x] \ b + [xy.y] \ c + [xy.x^2] \cdot d + [xy.xy] \ e + [xy.y^2] \ f = [xy \ .M]$$
$$[y^2 \ .1] \ a + [y^2 \ .x] \ b + [y^2 \ .y] \ c + [y^2 \ .x^2] \ d + [y^2 \ .xy] \ e + [y^2 \ .y^2] \ f = [y^2 \ .M]$$

the first members were always the same. This gives for the determination of the constants the following sets of normal equations:

$$+210.000a - 30.200b + 7.770c + 55.245d + 1.080e + 42.070f = [1 \ .M]$$
$$- 30.200a + 55.245b + 1.080c - 17.190d + 0.265e - 2.015f = [x \ .M]$$
$$+ 7.770a + 1.080b + 42.070c + 0.265d - 2.015e + 1.025f = [y \ .M]$$
$$+ 55.245a - 17.190b + 0.265c + 22.710d + 0.070e + 6.310f = [x^2 \ .M]$$
$$+ 1.080a + 0.265b - 2.015c + 0.070d + 6.310e + 0.025f = [xy .M]$$
$$+ 42.070a - 2.015b + 1.025c + 6.310d + 0.025e + 13.295f = [y^2 \ .M]$$

The second members of these equations for the different sets of plates, are as follows:

A106—B132 α	A103—B136 α	D1892—D1909 α	A106—B132 δ	A103—B136 δ	D1892—D1909 δ
+ 5″.815	+ 3″.442	— 8″.753	— 8″.697	+ 9″.479	+13″.308
+ 0 .703	+ 0 .360	— 8 .854	+ 0 .183	+ 1 .420	— 1 .333
— 2 .528	+ 1 .806	— 0 .448	— 4 .853	+ 3 .998	— 6 .813
+ 0 .979	+ 0 .968	— 1 .499	— 1 .250	+ 1 .868	+ 2 .558
— 0 .132	+ 0 .299	— 0 .292	+ 0 .386	— 0 .273	+ 0 .352
+ 1 .528	+ 0 .549	— 1 .901	— 2 .411	+ 2 .052	+ 4 .013

For the solution the method indicated by ENCKE in the Berliner Jahrbuch of 1835 was mainly followed. The following table gives a summary of the results obtained with their mean errors.

	A 106 — B 132, α	A 103 — B 136, α	D 1892 — D 1909, α
a =	+ 0″.0590 ± 0″.0100	+ 0″.0044 ± 0″.0087	— 0″.0335 ± 0″.0107
b =	+ 0 .0222 ± 0 .0056	+ 0 .0227 ± 0 .0049	— 0 .2273 ± 0 .0060
c =	— 0 .0729 ± 0 .0056	+ 0 .0439 ± 0 .0049	+ 0 .0009 ± 0 .0060
d =	— 0 .0752 ± 0 .0209	+ 0 .0470 ± 0 .0183	— 0 .1574 ± 0 .0224
e =	— 0 .0531 ± 0 .0142	+ 0 .0580 ± 0 .0124	— 0 .0290 ± 0 .0152
f =	— 0 .0272 ± 0 .0250	+ 0 .0052 ± 0 .0219	+ 0 .0033 ± 0 .0268

	A 106 — B 132, δ	A 103 — B 136, δ	D 1892 — D 1909, δ
a′ =	— 0″.0276 ± 0 .0090	+ 0″.0537 ± 0″.0073	+ 0″.0222 ± 0″.0109
b′ =	— 0 .0006 ± 0 .0050	+ 0 .0507 ± 0 .0041	— 0 .0029 ± 0 .0061
c′ =	— 0 .1064 ± 0 .0050	+ 0 .0827 ± 0 .0041	— 0 .1722 ± 0 .0061
d′ =	+ 0 .0423 ± 0 .0188	— 0 .0079 ± 0 .0152	— 0 .0109 ± 0 .0229
e′ =	+ 0 .0320 ± 0 .0127	— 0 .0282 ± 0 .0103	— 0 .0036 ± 0 .0155
f′ =	— 0 .1061 ± 0 .0224	— 0 .0104 ± 0 .0182	+ 0 .2496 ± 0 .0274

These constants, substituted into the original observations of all the stars, gave (after multiplication by Q) the values for m″α and m″δ of the tables.

Q was determined separately for α and δ, from the differences in α and δ of three pairs of stars taken from A. G. HELS, viz.:

for α:	1947	1957	2056
	2221	2209	2106
for δ:	2049	2064	2115
	2052	2067	2108

The mean distance of two scale-divisions of the measuring apparatus, derived from the measurement of 11 intervals, was 10″.110 and the epoch differences were:

12.063, 12.107 and 16.984 years respectively.

The Q's proved to be mutually concordant for each pair of plates. Moreover the Q's for α and δ appeared to be perfectly equal, namely:

for A 106 — B 132 Q = 0.489

,, A 103 — B 136 Q = 0.487

,, D 1892 — D 1909 Q = 0.349.

The formation and solution of the normal equations was checked by double calculation. Moreover, the values found for the unknown quantities were substituted into the normal equations. Also the check [nn.6] = [$\delta\delta$] was applied. This gave:

	[nn.6]	[$\delta\delta$]
A 106 — B 132, α	0.250	0.251
A 106 — B 132, δ	0.199	0.203
A 103 — B 136, α	0.192	0.193
A 103 — B 136, δ	0.130	0.133
D 1892 — D 1909, α	0.278	0.288
D 1892 — D 1909, δ	0.288	0.302

When substituting the constants in the formulae of reduction for the remaining 1208 stars, suitable checks were applied if feasible. Where this could not be done the calculation was made twice.

A few constants are greater than 0.″100, with DONNER's plates even $f' = 0''.250$ occurs. This would seem to show that in the coefficients $x\ y\ x^2\ xy\ y^2$ more than 2 decimals should have been taken if the computation of the P. M. is to be carried to 3 decimals. This also explains the differences between [nn.6] and [$\delta\delta$]. But it should be borne in mind that in order to obtain the components of the proper motions in seconds per year the values

$$M_\alpha - a - bx - cy - dx^2 - exy - fy^2$$
$$\text{and } M_\delta - a' - b'x - c'y - d'x^2 - e'xy - f'y^2$$

must be multiplied by Q. Hence in the values m''_α and m''_δ, given in the tables, the 3 decimals are quite justified as far as the computation is concerned.

CHAPTER VIII.

SYSTEMATIC ERRORS DEPENDING ON POSITION.

Although, speaking generally, the method followed by me for determining the constants of the plate, as KAPTEYN puts it [1] „seems to promise a priori a very thorough elimination of all systematic errors depending on the position of the stars" yet the present case is a very unfavourable one, since the 210 stars, furnishing the constants, are not evenly distributed all over the plate but lie within a ring with radii 32'.5 and 52'.0. As well the central as the marginal parts had to be excluded for the reasons mentioned on page 17. The great uncertainty resulting from this in the determination of the constants a d e f a' d' e' f' is confirmed by the small weights of these constants. That the rejection of the central stars is a chief reason of this may easily be seen in the following way. Let us put the imaginary case that to determine the constants 100 more stars had been used, all of them with $x = 0$ and $y = 0$, then the weights of the constants are calculated to be:

$$w_a = 112.4$$
$$w_b = 41.3$$
$$w_c = 41.1$$
$$w_d = 10.1$$
$$w_e = 6.2$$
$$w_f = 7.4$$

whereas I found:

$$w_a = 12.4$$
$$w_b = 39.6$$
$$w_c = 39.3$$
$$w_d = 2.8$$
$$w_e = 6.1$$
$$w_f = 2.0$$

------

[1] Publ. of the Astr. Lab. at Groningen, 1, 64.

Now, if the P. M. of the stars, belonging to the clusters h and χ were so great that we could make out which stars belong to the cluster and which do not, which will appear in Chapter XII not to be the case, then, by including such stars as certainly do not belong to the cluster, the plate constants could have been determined with much greater accuracy. But even now it is still possible to improve the values found for the P. M. by determining as well as possible the systematic errors depending on the position of the stars on the plate and applying the resulting corrections. This was done in the following manner. The plate was divided into 21 squares, as shown in the table:

$\diagdown$ x y	250^p	275^p	300^p	325^p	350^p
50^p		1	2	3	
75^p	4	5	6	7	8
100^p	9	10	11	12	13
125^p	14	15	16	17	18
150^p		19	20	21	

Now it was assumed that the mean P. M. of the stars in each of the squares must be constant. This assumption is entirely analogous to the supposition made in Chapter VI and is certainly justified by the large number of stars in each field. We had to reject again the two clusters h and χ (this meant the dropping of the whole square 11 and of the middle of square 10); all stars with a large P. M. (I chose the limit at $0''.075$ annually in one of the coordinates); the stars that had not been measured on all three pairs of plates.

In this manner a larger part of the plate could serve for determining the constants than formerly. Each field furnishes for every pair of plates two equations of condition of the form

$$\text{average } m''_\alpha = \alpha + \beta x + \gamma y + \delta x^2 + \varepsilon xy + \zeta y^2$$
$$\text{average } m''_\delta = \alpha' + \beta' x + \gamma' y + \delta' x^2 + \varepsilon' xy + \zeta' y^2,$$

enabling us to determine the constants

$$\alpha\ \beta\ \gamma\ \delta\ \varepsilon\ \zeta\ \alpha'\ \beta'\ \gamma'\ \delta'\ \varepsilon'\ \zeta',$$

after which to each of the calculated values $m^\circ{}_\alpha$ and $m^\circ{}_\delta$ the corrections

$$-\ \alpha\ -\beta x\ -\ \gamma y\ -\ \delta x^2\ -\ \varepsilon xy\ -\ \zeta y^2$$
$$\text{and}\ -\ \alpha'\ -\ \beta' x\ -\ \gamma' y\ -\ \delta' x^2\ -\ \varepsilon' xy\ -\ \zeta' y^2$$

respectively are to be applied.

Weights were assigned to the different fields in the following manner.

Let n be the number of stars to be used in each field, s the mean error of the average P. M. in a field on each of the three pairs of plates, t the mean error in the individual P. M. of the stars in the same field on the three pairs of plates, then the weight to be assigned to each field is given by the formula:

$$w\ =\ \frac{1}{s^2 + t^2/n}$$

It appeared that n as well as s and t did not diverge very much for the fields 1, 2, 3, 4, 8, 9, 13, 14, 18, 19, 20, 21 and this was also the case with 5, 6, 7, 10, 12, 15, 16 and 17. Therefore the fields were divided into two groups, the marginal and the central fields. I thus found for

		n	s	t	w
marginal fields	α	35	$0^{\prime\prime}.0070$	$0^{\prime\prime}.0116$	1
	δ	36	$0^{\prime\prime}.0059$	$0^{\prime\prime}.0100$	4
central fields	α	68	$0^{\prime\prime}.0020$	$0^{\prime\prime}.0069$	11
	δ	68	$0^{\prime\prime}.0039$	$0^{\prime\prime}.0082$	9

For the values given under t, the averages were taken of the mean errors of the mean of some five stars in each field. As was done throughout this paper, the circumstance that the pair of plates by DONNER had an epoch difference of 17 years and both pairs by KOSTINSKY of 12 years was taken into account, by assigning to DONNER's pair the weight 2, to those of KOSTINSKY the weight 1.

The 12 constants were redetermined by the method of least squares, the computation being done twice; for convenience sake the weight of the central fields in α was taken as 9 instead of 11.

On applying the corrections:

$$- \alpha - \beta x - \gamma y - \delta x^2 - \varepsilon xy - \zeta y^2$$
$$\text{and} - \alpha' - \beta' x - \gamma' y - \delta' x^2 - \varepsilon' xy - \zeta' y^2$$

respectively, to the mean P. M. of each of the 20 fields, I found that the errors s had been much reduced by the above operation viz.:

$$\text{marginal fields} \begin{cases} \text{in } \alpha \text{ to } 0''.0062, \\ ,, \ \delta \ ,, \ 0''.0035, \end{cases}$$

$$\text{central fields} \begin{cases} ,, \ \alpha \ ,, \ 0''.0017, \\ ,, \ \delta \ ,, \ 0''.0031. \end{cases}$$

The question now arose whether by repeating this process a further improvement of the P. M. could be achieved. Introducing the new values for the errors s and retaining the old values for the errors t, which play a much less important part since they are divided by n, the formula now gave the following weights:

$$1, \ 6, \ 11 \ \text{and} \ 9.$$

The change is none for α and so trifling for δ that I felt justified in not re-calculating the constants. Since, however, the errors s had been so much more reduced in δ than in α, I also re-determined the constants in α, using the weights 4 and 9 for the marginal and central fields, in this case also, though there was no a priori reason for doing so. The result was that the errors s became:

$$0''.0058 \text{ for the marginal fields,}$$
$$0''.0018 \text{ for the central fields.}$$

Since thus also a posteriori there appeared to be no reason at all why the constants, based on the weights 4 and 9 should be considered more trustworthy than those, computed by assigning the weights 1 and 9, the corrections found in the first determination were applied to the P. M. m''_α and m''_δ. These corrections generally being small (only near the margins of some plates the correction amounted to more than $0''.010$) they could be most easily applied by means of diagrams. For this purpose for each pair of plates curves in α and δ were plotted for which the correction amounted to:

$$\ldots\ldots - 0''.002^5 - 0''.001^5 - 0''.000^5 + 0''.000^5 + 0''.001^5 + 0''.002^5\ldots,$$

the scale being such that the correction itself could be read directly for each separate star with an accuracy of $0''.001$. Thus the values m_α'' and m_δ'' in the tables are transformed into μ''_α and μ''_δ. These are the final relative P. M. They were averaged, assigning the weights 1, 1 and 2, respectively to the 2 pairs of KOSTINSKY and that of DONNER. The results have been tabulated in the last two columns of the pages on the right (see tables at end of paper).

CHAPTER IX.

SYSTEMATIC ERRORS DEPENDING ON MAGNITUDE.

The principal errors of this kind are the hour-angle error [1]) and the guiding-error. In our case, however, the hour-angle error has been pretty well eliminated, since the four plates by KOSTINSKY were all taken very near the meridian and both plates by DONNER at perfectly equal hour-angles.

Immediately after I had measured the six plates, proper motions were derived without taking into account the quadratic terms. With the results so obtained an investigation was made about the systematic errors depending on the relative magnitude by determining the mean P. M. in α and δ of as many stars as possible of the same diameter. The curves plotted by means of these results showed that only with the pair A 106 — B 132 in α a magnitude error could be detected. The error was fairly well proportional to the diameter and amounted to

$$-0''.033 \times (\text{diameter in revolution} -0''.552).$$

This value approximately corresponds to $+0''.007 \times (\text{mag} - 13.0)$. But the number of plates is too small to decide whether this magnitude error in the pair A 106 — B 132 is real. If it had been possible to distinguish with certainty whether any given star belonged to the cluster or whether it did not, these data might have afforded an excellent proof as to whether

---

[1]) Publ. of the Astr. Lab. at Groningen, **1**, 66.

the differences in the average P. M. with different magnitudes should or should not be ascribed to a magnitude error, since for these stars the P. M. should of course have been equal for all magnitudes. Since my measurements could not give certainty on this point, I thought that I ought not to take a magnitude error into account, as it is at any rate relatively small (see Publ. of the Astr. Lab. at Groningen, **19**, 35). Similarly its amount was not re-determined from the final P. M., since the difference from my determination can never be considerable, the stars of every magnitude being pretty evenly distributed all over the plate.

CHAPTER X.

The standard stars.

In order to derive the absolute P. M. from the relative P. M. the corrections $\Delta \mu''_\alpha$ and $\Delta \mu''_\delta$, mentioned in Chapter VI are still to be applied to μ''_α and μ''_δ. From the beginning a dozen bright stars had been selected for this purpose, namely: A. G. Hels 1938, 1981, 1997, 2057, 2061, 2071, 2088, 2093, 2113, 2150, 2177, 2217. All these stars occurred in various other catalogues so that they could furnish good absolute P. M. when combined with recent meridian observations; they were chosen so as to be distributed as equally as possible over the whole plate. Prof. Auwers had the kindness to send me the catalogue positions of these 12 stars reduced to the equinox 1875.0; a summary of them is given in the following table, to which I added a few positions given by Pihl, Oertel, Schur, and the Misses Bronsky and Stebnitzky; a star marked x had no catalogue-number.

The abbreviations are the same as those used by Auwers in A.N. 4176. The star A. G. Hels 1938 (No. 1563 in my list, see end of book) had to be dropped after all. This star, although situated on the plates at 69'.5 from the centre, had been measured, but showed such a considerable mean error in the P. M. that for the determination of $\Delta \mu''_\alpha$ and $\Delta \mu''_\delta$ I thought it better not to compare this P. M. with that derived from catalogues.

Author-ity	Aequi nox.	Current numbers of Catalogues used for Nos. (A.G.Hels):									
		1981	1997	2057	2061	2071	2088	2093	2113	2150	2177	2217
Br.	1755			310	311		316			323	328	330
Lal.	1800			4139	4147					4280	4311	4374
Pi.	1800			27	29		35	36				65
Grb.	1810			485	486		488	490				508
Tay. D.	1835			739	740		744	745				782
Rob.	1840			491	493		496	499		508	512	518
12y.	1840									205	207	
A. Oe.	1842			2574								2707
12 y.	1845				200						207	
R. C.	1845			658	659		665	670		686	691	701
Par. 1	1845			2811	2815						2910	
Do. 50	1850						33					
6y.	1850									141	142	
Wro. 2	1850										110	
Bo. VI	1855						x	x				
Pu. M.	1855			322	324		327			337	339	346
Pu. M. 0.	1855							217				
R. C. 2	1860						279					
Par. 2	1860						2835	2837		2892		
Ya.	1860						1053	1055		1072	1083	
N. 7 y.	1864			303								318
O.	1865						877	879		897	912	921
Pu. 2. 0.	1865					7	61	63	α 64 δ 8	10		
Gl.	1870							499				
A.N.3212	1870										x	
A.G. Hels	1875	1981	1997	2057	2061	2071	2088	2093	2113	2150	2177	2217
Re. 1	1875			140								
Be.	1875				47		48			51	53	
Rbg.	1875					540			551			
Wa. 2	1875					479			484	493		
Kam 2	1875						777/8	779		788 —90		
Bo. Hel.	1875					5	1	2	12			
Kü. 1	1885						86			90		
Strb. 2	1885						104			106		
L. G.	1890			232								

Author-ity	Aequi-nox	Current numbers of Catalogues used for Nos. (A. G. HELS):										
		1981	1997	2057	2061	2071	2088	2093	2113	2150	2177	2217
II. 10y.	1890			759	760		765	768				796
Ru.Ps.ph.	1890		3	27	28	39	60	76	78	103	128	
A.N.3219	1892						3					
A.N.3251	1892							4				
Bm. 1	1895				98					103		
Pu.15. N.	1900						1152					
Ci. 3	1900			442	444		448	451				468
L. G. 2	1900				154		156	157		161	162	165
Pihl	1870									78		
Oertel	1890					34	1	19	74			
Schur	1890					c		e	f		l	m
B. and S.	1890			199	216	293	462	504	630	843	993	1183

To the values of these catalogues, reduced to the equinox 1875.0 (including the third precessional term) systematic corrections were applied, in order to reduce them all to the N. F. K. system (A. N. 3927). In doing this I availed myself as much as possible of AUWERS' tables in „Ergänzungshefte zu den A. N.", Nr. 7, making due allowance for the remark published A. N. 4200. For the catalogues not mentioned there I used if possible the systematic corrections communicated by BATTERMANN [1]).

There remain a few catalogues occurring in neither of the papers named, viz.:

Pu. M. o.: a similar correction was applied as with Pu. M. 1855.

Bo. Hel.: KRÜGER's Heliometer observations; the position and syst. corr. from A. G. HELS, (8).

Ru. Ps. ph.: RUTHERFURD Photographs of the Stellar Clusters h and χ Persei by A. S. YOUNG. Contr. from the Obs. of Columbia Un., 24. Syst. corr. derived from the comparison with KRÜGER, given there on page 67.

---

[1]) Beob. Ergeb. der Kön. Sternwarte zu Berlin, 12.

A. N. 3219 and A. N. 3251: Beobachtungen von Vergleichsternen, angestellt auf der K. Un. Sternwarte in Kasan. The system is that of the Berliner Jahrbuch.

Pu. 15 N.: Publ. de l'Obs. Central Nicolas, série II, **15**. Syst. corr. in the introduction itself.

Pihl: The stellar Cluster χ Persei micrometrically surveyed, Christiania, 1901. Syst. corr. derived via the comparison by the Misses Bronsky and Stebnitzky, Mém. de l'Ac. de St. Pétersbourg, Série VIII, **2**, **126**.

Oertel: Neue Ann. der K. Sternwarte in Bogenhausen bei München, **2** Syst. corr. derived from the comparison with Krüger, on page B. **79**.

Schur: Astr. Mitt. von der K. Sternwarte zu Göttingen, **6**. Syst. corr. from a comparison with A. G. Hels, page **82**.

B. and S.: Mém. de l'Ac. de St. Pétersbourg, série VIII, **2**. Syst. corr. from the comparisons given there on pp. 117 and 119 of the observations mutually and of these observations with A. G. Hels.

I was very sorry not to be able to make use of seven papers named hereafter, either on account of inaccurate observations, or because it was impossible to apply a reliable systematic correction, viz.:

Do. 50;

A. N. 3212;

Kam 2;

Lamont, Der Sternhaufen _h_ Persei, Ann. der K. Sternwarte bei München, **17**.

Bredichin, Mesures micrométriques du Groupe de Persée, Ann. de l'Obs. de Moscou, **4**, livre 2.

Vogel, Der Sternhaufen χ Persei, Leipzig, 1878.

Ball and Rambaut, On the relative position of 223 stars in the cluster χ Persei, Trans. of the R. Irish Ac. **30**, part 4.

In addition to the positions of the catalogues mentioned I was fortunate enough to avail myself of some recent meridian observations, taken at my request at Leyden and at Bonn.

As to the observations from Leyden, the right ascensions after applying the correction for magnitude, were based on the N. F. K. system. For the declinations Dr. Zwiers sent me the corrections to be adopted. Finally,

in the observations from Bonn the „Helligkeitsgleichung" (correction for brightness) had been directly eliminated by the use of wire gauzes; the system was that of the N. F. K.

The weights to be assigned to the observations were taken either from Auwers' tables in A.N. 3615, 3616, 3844 and 3888 or derived from the mean errors by means of Auwers' table in A. N. 3616.

In the determination of the P. M. of the fundamental stars the method of least squares was again exclusively followed. The result is given in $0''.001$ in the following table under the headings $\mu''_\alpha C$ and $\mu''_\delta C$ for the P. M. in α and δ, while under the heading w the weights are given, resulting from the computation, but expressed in integers.

No.	No. A. G. Hels	$\mu''_\alpha C$	$\mu''_\alpha O$	C—O	w	$\mu''_\delta C$	$\mu''_\delta O$	C—O	w
39*	2217	— 14	— 9	— 5	18	+ 6	— 26	+ 32	13
273	2177	— 8	+ 8	— 16	17	— 6	— 9	+ 3	8
358	2150	— 7	+ 4	— 11	16	— 1	— 3	+ 2	7
685	2113	— 10	— 2	— 8	7	— 10	— 25	+ 15	4
798	2093	— 13	— 7	— 6	14	0	— 12	+ 12	9
830	2088	— 7	— 5	— 2	16	+ 1	— 17	+ 18	13
992	2071	— 7	— 7	0	5	— 19	— 9	— 10	4
1057	2061	— 32	— 15	— 17	16	— 4	— 1	— 3	19
1042	2057	+ 54	+ 55	— 1	15	+ 9	+ 16	— 7	12
1413	1997	+ 11	— 15	+ 26	7	+ 1	+ 1	0	2
1464	1981	— 62	— 6	— 56	0	+ 4	— 1	+ 5	0

Under $\mu''_\alpha O$ and $\mu''_\delta O$ the P. M. of these fundamental stars are found, as derived in Chapter VIII, under C—O the values $\mu''_\alpha C — \mu''_\alpha O$ and $\mu''_\delta C — \mu''_\delta O$. These values, averaged by means of the weights given in the table, I used as the final corrections to be applied to the P. M. in the tables, in order to transform the relative P. M. μ''_α and μ''_δ are into absolute P. M. They are:

$$\Delta\mu''_\alpha = — 0''.006 \pm 0''.0030,$$
$$\Delta\mu''_\delta = + 0''.007 \pm 0''.0042.$$

CHAPTER XI.

The mean error of the Proper Motions.

In order to avoid the tedious process of writing down the squares of some 8000 numbers, the mean error of the final P. M. μ''_α and μ''_δ was computed by an approximate method; the result is on the average $0''.0089$ and $0''.0081$ in α and δ respectively.

In order to investigate the difference in reliability of the P. M. for the stars at the centre and near the edge, the m. e. was separately determined for the stars within a circle with a radius of $50'.2$, inside the ring with radii $50'.2$ and $56'.3$ and inside the ring with radii $56'.3$ and $62'.0$.

The result was:

distance from centre	m. e. in μ''_α	m. e. in μ''_δ
less than 50'.0	0''.0078	0''.0077
from 50'.2 to 56'.3	0''.0118	0''.0092
from 56'.3 to 62'.0	0''.0154	0''.0109

The increase in m. e. when approaching the edge is evidently, notwithstanding the bad images of the marginal stars, so gradual that no sharp line can be drawn for the stars that have to be rejected for further examination. Consequently I used all stars, having a weight of at least 3, as well for determining the P. M. of the star-clusters as for determining the frequency of the P. M.

That the accuracy, corresponding to the m. e. of $0''.0085$ cannot be reached by an absolute method has already been shown in the Chapters I and V. This opinion was based on the m. e. of the Potsdam and Paris astrographic catalogues, to which I shall now add a few other mean errors:

Catalogue	m. e.	Source
Potsdam	0″.237	Phot. Himmelskarte, 1, 23.
Paris	0″.237	Cat. Phot. [7].
Helsingfors	0″.241	Sur la préc. des dét. phot., 79.
Oxford	0″.577	Astr. Cat. 1, 33.
Greenwich	0″.400	Astr. Cat. 1, 36.
Misses BRONSKY and STEBNITZKY	0″.318	Mém. de l'Ac. de St. Pt. série VIII, 2, 117.
RUTHERFURD photogr.	0″.390	Contr. from the Obs. of Columbia Un. 24, 37.

From this summary it is evident that in our comparison (Chapter I) of the accuracy attainable by the absolute and differential methods we remained on the safe side.

One of the unavoidable sources of errors is the error of pointing. We shall therefore investigate its influence on the m. e. in the obtained P. M.

For this purpose the error of pointing was determined on each plate for 40 to 60 stars of different diameters. A summary is given in the following table :

diameter / Plate	> 0″.750	0″.750—1″.250	1″.250—1″.750	> 1″.750
A. 106	0″.0102	0″.0079	0″.0072	0″.0089
B. 132	0 .0096	0 .0091	0 .0081	0 .0149
A. 103	0 .0110	0 .0089	0 .0088	0 .0119
B. 136	0 .0083	0 .0073	0 .0080	0 .0120
D. 1892	0 .0103	0 .0100	0 .0134	0 .0196
D. 1909	0 .0087	0 .0085	0 .0120	0 .0184
Mean	0 .0097	0 .0086	0 .0096	0 .0143

The large error of pointing with stars of diameters > 1″.750 on DONNER'S plates is to be explained by the fact that there the diameters are considerably

greater than on Kostinsky's and often exceeded 3".000. For convenience sake these have all been collected under the heading > 1'.750.

The error of pointing on a scale-division was repeatedly determined and found to be on an average 0".0037; if in order to facilitate calculation the error of pointing of a star is assumed to be on an average 0".0106, we find 0".0112 for the definitive total error of pointing in one of the numbers M in the tables, derived from the mean of two pointings on two stars and two scale-lines (Cf. Chapter IV).

It will be easily perceived that by the pointing on the scale-divisions which is necessary in our method but is avoided in Kapteyn's method the accuracy of the final results is not perceptibly diminished and that consequently the assertion made on page 8 is fully justified.

The value found for the m. e. in the numbers M gives by multiplication with 0.244 the m. e. in seconds of arc, caused by the error of pointing in the average P. M. of the three plates. It works out at 0".0027.

It is evident that the error of pointing constitutes only a small fraction of the m. e. resulting in the P. M. If I had not pointed twice but only once, as well on the stars as on the scale-lines, this would have increased the m. e. in the final P. M. only from 0".0089 and 0".0081 in α and δ respectively to 0".0093 and 0".0085.

Hence repeated pointing cannot increase the accuracy of the final results in proportion to the increase in labour.

The slight amount of the m. e. of the *average* P. M. (Cf. Chapter VIII) proves that, the distortion of the film being exceedingly small, the principal source of the final m. e. must be sought in irregularities of the images themselves. This opinion has already been expressed by other observers, among others by Kapteyn, Wilsing and Perrine and is once more confirmed here.

To what extent the greater m. e. in the final P. M. and at the same time the greater m. e. in the *average* P. M. of the marginal fields, discussed in Chapter VIII must be ascribed either to erroneous values of the plate constants, or to the greater irregularities of the images or to a distortion of the film, cannot be decided by my measurements. It would be possible to decide this by a reduction, quite analogous to the present one, in which the plates of the same

epoch were combined, since then, with more precise constants, an irregularity of the images would not introduce systematic errors depending on the position on the plate, whereas distortion would do so. The labour of reduction would have been doubled by such an investigation.

CHAPTER XII.

The group stars.

Already at the first reduction it became apparent that the stars of the groups h and χ Persei had such a small P. M. that it would prove impossible to make out with certainty which stars are and which are not members of the groups.

In order to determine the P. M. as accurately as circumstances permitted I took the densest parts of both groups. After a first approximation the stars whose P. M. differed to an appreciable amount from the minute group drift were excluded. So I obtained for the average relative P. M.:

Group	$\mu''\alpha$	$\mu''\delta$	Stars
h	$-\ 0''.0039$	$+\ 0''.0026$	49
χ	$-\ 0''.0006$	$+\ 0''.0050$	42

The next step was to try and find out a possible relative movement among the group-stars. For this purpose I drew the vector diagram of the P. M. of the stars probably belonging to h and χ (which could be decided by countings) for areas of 5 minutes square.

The result was negative.

Starting from the P. M as found above and from a probable error in

the total P. M. of ± 0″.015, I found the following actual and theoretical numbers of stars, probably belonging to h and χ, as classed according to the deviation of the P. M. from the general group drift of the clusters:

Numbers of stars in	h Persei		χ Persei	
limits of deviation	actual	theoretical	actual	theoretical
0″.005	61	98	78	101
0″.010	173	178	174	182
0″.015	230	230	233	236
0″.020	257	257	264	264

I would not venture to draw from this a conclusion concerning a *swarming* P. M., as DE SITTER did for the Hyades (Publ. of the Astr. Lab. at Groningen, **14**, 26), the less so, since it was found that for h Persei as well as for the surrounding stars the P. M. showed a preference for two different values, instead of one, viz:

$$\mu''_\alpha = - 0''.005; \qquad \mu''_\delta = - 0''.001$$
$$\mu''_\alpha = - 0''.001; \qquad \mu''_\delta = + 0''.008.$$

Although I would not assert that this phenomenon is caused by a real P. M. of the stars of h Persei and although the small amount of the P. M. of both clusters does not enable us to settle whether it is caused by a number of stars, not physically belonging to h, but possibly to χ, or to what extent it must be ascribed to systematic errors in the P. M., yet I thought it necessary to mention it here.

Since the small amount of the P. M. does not permit to make out with certainty which stars do and which do not belong to the groups, I refrained from any attempt at determining the parallax of the clusters, by means of KAPTEYN's and DE SITTER's results mentioned in Chapter I. We might surely exclude with certainty the stars with a large P. M. as not belonging to h or χ Persei, but inversely a small P. M. in the same direction as that of h or χ does

not necessarily prove that a star is a member of either of the two clusters.

The final result is, that a conclusion as to this vital question will have to be postponed till the P. M. have been determined with a considerably greater degree of accuracy than was reached here, unless other means, e. g. the radial P. M. of these stars, will furnish the necessary data.

CHAPTER XIII.

DETERMINATION OF THE MAGNITUDES.

The diameters of all stars, except a few very faint ones, had been measured on one of the plates, viz: A 106. Magnitudes were derived from them by a graphical process. The bright and faint stars were treated differently, while of part of the stars the magnitudes were determined in both ways.

For the brighter stars (233) the magnitudes of the Bonn Durchmusterung were used, after applying a correction to reduce them to the H. P. system. For this purpose the magnitudes of the stars of this region of the sky, occurring in Annals of the Astr. Obs. of Harvard College 54,

$$\alpha = 2^h\ 0^m \text{ to } 2^h\ 24^m,\ \delta = +50° \text{ to } +60°,$$

were compared with those of the B. D. The following table shows that the systematic difference H. P. — B. D. is nearly constant for the rather small area under consideration:

δ \ α	$2^h\ 6^m$	$2^h\ 18^m$
50°	+ 0^m.18	+ 0^m.16
55	+ 0 .21	+ 0 .25
60	+ 0 .15	+ 0 .15

It does however depend on the magnitude, as will be seen from the next table.

mag.	6^m.4 to 7^m.4	7^m.5 to 8^m.4	8^m.5 to 9^m.5
H. P.—B.D.	+ 0^m.24	+ 0^m.18	+ 0^m.14
number of stars	39	31	24

For the fainter stars (diameters < 1′.400) the magnitudes were deduced from the numbers of stars of different diameters, counted on the plate, by means of KAPTEYN's tables (Publ. of the Astr. Lab. at Groningen, **18**). Of course the groups had to be excluded from the discussion, their borders being again found by countings.

Besides Prof. NIJLAND had the kindness to estimate the brightness of 14 stars of mag. ± 13.5 and of 6 stars of mag. ± 11.2 in the Utrecht refractor (aperture 26 c.M.) and in its finder (aperture 7.5 c.M.), whose limits of vision had been formerly found to be 13.9 and 11.5 respectively, in the H. P. system (A. N. 4116). The method used consisted in estimating how many steps a certain faint star was above the limit of the instrument. Although these observations are as a matter of course rather difficult, Prof. NIJLAND is yet of opinion that the m. e. in a magnitude determined by him in this way, based on at least three observations, does not exceed 0^m.2. A small correction for atmospheric extinction was applied, taken from the tables in Publ. des Astroph. Obs. zu Potsdam, **3**, 285.

The corrected magnitudes derived by means of the three methods just mentioned were plotted as ordinates with the diameters as abscissae and a smooth curve was drawn through all the points thus obtained, discarding however the B.D. stars with magnitudes fainter than 9^m.0, since it has already repeatedly been found that among them numerous stars occur, whose magnitudes are considerably (even as much as two classes) fainter than given in the B. D.

The agreement between the magnitudes, obtained by the widely different methods was rather good on the whole. Still there are some discrepancies, which may be explained in the following way.

From 8^m.5 to 12^m.0 the magnitudes derived from the countings are on

an average $0^m.2$ fainter than those indicated by the final curve. This deviation may be largely if not totally explained by the supposition that, although I tried to exclude the clusters, yet a number of stars belonging to them has been embodied in the countings.

On the other hand we find for magnitudes fainter than $12^m.0$ that the magnitudes from the countings are brighter than those following from NIJLAND's estimates. The reason is that there are very many small stars, presenting such vague discs that there could be no question of a regular measurement and which were consequently rejected from the beginning; therefore the numbers of stars with diameters $> 0''.600$ come out far too small, as will appear from the following table, containing in the first column the limits of the diameters, in the second the numbers of stars on a surface of 1.38 square degree, in the third the ratios of these numbers.

diameter	number	ratio
$1''.400$	5	
1 .300	10	2.00
1 .200	17	1·70
1 .100	23	1.35
1 .000	39	1.70
0 .900	66	1.69
0 .800	103	1.56
0 .700	167	1.62
0 .600	272	1.63
0 .500	353	1.30
0 .409	378	1.07

These ratios are at first somewhat irregular, which must certainly be ascribed to the small number of stars used, but they become fairly well constant for the diameters $1''.100$ to $0''.600$. With the smaller diameters the decreasing ratio undoubtedly indicates that not all the stars with diameters between the assigned limits were taken into account. If the constant ratio 1.64 be applied throughout the table, the magnitude of the faintest stars is to be estimated 13.5 from the countings, whereas Prof. NIJLAND finds 14.0. The latter value has finally beend adopted.

Though of no importance for the present paper, it is worth while to remark that the photometric determination of PARKHURST used by KAPTEYN almost exclusively for the magnitudes 14.0 and fainter are by no means homogeneous with those of PICKERING.

It was already pointed out by VAN DER BILT in „Recherches Astronomiques de l'Observatoire d'Utrecht, **3**, that there is a systematic difference between PARKHURST's and PICKERING's magnitudes in the case of the comparison stars for the variable stars U Geminorum and Nova Aquilae.

I therefore examined this systematic difference in the case of a few other variable stars, viz.: T Andromedae, S Cygni and S Comae Berenices, whose comparison stars are to be found in H. A. **37** and in PARKHURST's Researches in Stellar Photometry, 1906.

To these I added the comparison stars of W Andromedae and Y Cassiopeiae, the brightness of which, expressed by NIJLAND in the H.P. system, could be compared with the values given by PARKHURST. The result is that PARKHURST's and PICKERING's observations agree well at $8^m.0$ and $9^m.0$, but that for fainter stars the difference is considerable; at $12^m.2$ the difference PARK.-PICK. even amounts to $— 0^m.64$ (from 17 stars). Unfortunately the material on which this conclusion is based is small and contains no more than 35 stars.

Besides the already mentioned systematic deviation in the magnitudes of the stars of the B. D. with mag. fainter than 9.0, I still found large deviations in magnitude with some 10 brighter B. D. stars. These have been collected in the following table:

No.	No. B. D.	mag. from diam.	corr. mag. B. D.
48	+ 56° 609	10.6	8.6
217	+ 56° 597	10.7	8.7
218	+ 56° 595	10.4	8.6
327	+ 55° 600	9.6	8.5
408	+ 56° 583	10.5	8.7
440	+ 55° 597	9.9	8.4
457	+ 57° 550	10.2	8.6
569	+ 56° 551	10.1	8.4
635	+ 56° 547	10.4	8.4
990	+ 56° 497	10.3	9.0

The stars B. D. + 56° 497, 547, 551, 583, 595 and 597 are not found on RUTHERFURD's photographs [1]), measured by YOUNG. This points to a possible great difference between the photographic and visual magnitudes.

B. D. + 56° 583 and 563 are called reddish by VOGEL [2]). NIJLAND assigns to the former a colour-shade $4^c.3$. (In SCHMIDT's scale). The latter is not shown in the table; photographically it is $9^m.7$, while the corrected visual mag. (B. D.) is 9.4. LOHSE [3]) has already drawn attention to the remarkably small difference between the visual and photographic magnitude for these this coloured star.

Also B. D. +56° 547 and B. D. +56°551 are called yellow by NIJLAND, shade $3^c.7$.

CHAPTER XIV.

THE FREQUENCY OF THE PROPER MOTIONS.

While for the determination of the P. M. of the clusters h and χ Persei I had to start from stars, pretty certainly belonging to either of the groups and consequently had to restrict myself to their densest parts, on the contrary for the determination of the frequency of P. M. according to magnitude and amount of P. M. I was only to use those stars which very likely were no members of either of the two clusters.

Different ways could now be followed.

1. All the stars could be used which visually appeared to fulfil this condition.

2. I might start from the stars whose P. M. differed from the P. M. of the groups by more than 2 or 3 times the probable error in the P. M.

3. I might take only the stars which for both reasons did not belong either to h or to χ Persei.

An enormous drawback of the two last methods is that a great part of the stars whose P. M. lie between $0''.000$—$0''.009$ and $0''.010$—$0''.019$ and

---

[1]) Contr. from the Obs. of Columbia Un. **24**, 54.

[2]) Vogel, Der Sternhaufen h Persei, Leipzig, 1878,12.

[3]) A. N. 2650.

even part of those stars with P. M. 0″.020—0″.029 is excluded, which have the P. M. in common with the clusters h and χ but are not physically connected with them. If the P. M. is large as with the Hyades, this drawback is much less felt. In our case we should have had to limit the discussion to P. M. exceeding 0″.030 or make up for the deficiency in the smaller P. M. by introducing hypotheses about the frequency of a certain value in various directions. This would have led to all sorts of difficulties by which after all in the P. M. less than 0″.030 a great uncertainty in the frequency would remain. Although I also followed these ways, I shall here only give the results found by the first method. It is quite possible of course that yet a number of stars were included that must be reckoned to h or χ Persei, but I think this difficulty has been sufficiently overcome by taking fairly wide limits for the stars which visually are no group-stars. The number of stars is hereby considerably lessened, but the certainty is much increased. Thus 763 stars remained, the frequency of which is given in the following table. The P. M. have been reduced to the N. F. K. system.

μ″ \ Mag.	B—6.5	6.6—7.5	7.6—8.5	8.6—9.5	9.6—10.5	10.6—11.5	11.6—12.5	12.6—13.5	13.6—14.0	Total
0″000-″0.009	1	2	2	3	16	28	45	36	9	142
0.010- 0.019		1	7	8	32	65	98	77	12	300
0.020- 0.029	1	2	1	6	22	40	67	40	12	191
0.030- 0.039	1			3	5	13	28	23	5	78
0.040- 0.049				4	3	4	10	7	1	29
0.050- 0.059		1		2			2	1		6
0.060- 0.069					1		2	1		4
0.070- 0.079			1	1			1	1		4
0.080- 0.089										0
0.090- 0.099									1	1
0.100- 0.149				1	1		1	1		4
0.150- 0.199						1	1			2
0.200- 0.249										0
0.250- 0.299										0
0.300- 0.349		1								1
0.350- 0.399				1						1
Total	3	7	11	29	80	151	255	187	40	763

The remarkable phenomenon is now at once noticed that most P. M. do not lie between the limits $0''.000$ and $0''.009$ but between $0''.010$ and $0''.019$. This is also the case with the frequency of the P. M. according to magnitude and amount of P. M. for stars, brighter than $6^m.5$, given by KAPTEYN in Publ. of the Astr. Lab. at Groningen, **11, 8**. There the phenomenon is not found with the stars of $6^m.5$ to $9^m.5$, but then the numbers given for these are not directly derived from observations; the subdivision of the P. M. $0''.000$—$0''.099$ was, as KAPTEYN puts it: ,,made by the aid of certain plausible conditions, which are centainly or probably fulfilled by the numbers of small proper motions''.

This phenomenon of relatively few small P. M. can be explained in various ways.

1.   The corrections $\Delta \mu''_\alpha$ and $\Delta \mu''_\delta$ may be inaccurate.   They are based on no more than 10 stars and have m. e. of resp. $0''.0030$ and $0''.0042$. So it is not impossible that the corrections $\Delta \mu''_\alpha$ and $\Delta \mu''_\delta$ would come out different if we started from a larger number of fundamental stars. But I doubt whether this change would be such that the zero point of P. M. would shift sufficiently to cause the phenomenon to disappear.

2.   It is perhaps better to base the P. M. on another system than the N. F. K.   In Publ. of the Astr. Lab. at Groningen, **9** KAPTEYN reduces the P. M. to a system which is practically equivalent to that of NEWCOMB. In order to reduce my P. M. to this system, assuming that the systems ,,AUWERS—BRADLEY'', ,,Fundamental-Katalog der A. G.'' and ,,N. F. K.'' do not appreciably diverge, as far as P. M. are concerned, the absolute P. M. should be corrected by

$$+ \ 0^s.00035 \ + \ 0^s.00035 \ \sin \alpha \ \operatorname{tg} \delta$$

and

$$+ \ 0''.0053 \ \cos \alpha$$

in α and δ respectively.

Since these corrections, amounting in the present case to

$$+ \ 0''.0053 \ \text{and} \ + \ 0''.0045,$$

do not shift the zero point in the right direction I thought it advisable not to apply them until more certainty about the best system will have been obtained.

3. The parallactic P. M. may be of influence. In order to find out whether the relatively small number of stars with P. M. less than 0″.009 may be ascribed to parallactic motion, I determined for 755 of the stars used (the eight P. M. exceeding 0″.100 were discarded for practical reasons) the frequency of the components υ and τ parallel and at right angles to the great circle h Persei—Apex. We may assume symmetry in both cases, in the first case with respect to the parallactic P. M. of the stars of my average magnitude, in the second to the P. M. 0″.000. For the direction of the parallactic motion the position-angle was taken = 133°, corresponding to the Apex

$$\alpha = 269°.7, \delta = +30°.8,$$

this being the latest determination from Prof. KAPTEYN's data, which he was so kind to give me. (Pos. values for υ are counted towards the Antapex (S. E.), for τ towards N. E.)

The real frequency of υ and τ is given in the following table:

Limits			Numbers υ	Numbers τ
+ 0″.090	to	+ 0″.095	1	
+ 0 .085	,,	+ 0 .090	0	
+ 0 .080	,,	+ 0 .085	0	
+ 0 .075	,,	+ 0 .080	0	
+ 0 .070	,,	+ 0 .075	1	
+ 0 .065	,,	+ 0 .070	1	1
+ 0 .060	,,	+ 0 .065	2	0
+ 0 .055	,,	+ 0 .060	0	1
+ 0 .050	,,	+ 0 .055	1	1
+ 0 .045	,,	+ 0 .050	1	0
+ 0 .040	,,	+ 0 .045	2	1
+ 0 .035	,,	+ 0 .040	4	5
+ 0 .030	,,	+ 0 .035	5	13
+ 0 .025	,,	+ 0 .030	6	17
+ 0 .020	,,	+ 0 .025	6	19
+ 0 .015	,,	+ 0 .020	15	33

Limits			Numbers υ	Numbers τ
+ 0 .010	to	+ 0 .015	17	82
+ 0 .005	,,	+ 0 .010	23	85
+ 0 .000	,,	+ 0 .005	54	99
— 0 .000	,,	— 0 .005	98	110
— 0 .005	,,	— 0 .010	132	123
— 0 .010	,,	— 0 .015	138	63
— 0 .015	,,	— 0 .020	106	43
— 0 .020	,,	— 0 .025	75	23
— 0 .025	,,	— 0 .030	28	17
— 0 .030	,,	— 0 .035	19	9
— 0 .035	,,	— 0 .040	8	5
— 0 .040	,,	— 0 .045	9	3
— 0 .045	,,	— 0 .050	1	1
— 0 .050	,,	— 0 .055	2	0
— 0 .055	,,	— 0 .060	0	1
— 0 .060	,,	— 0. 065	0	0
— 0 .065	,,	— 0 .070	0	0
— 0 .070	,,	— 0 .075	0	
— 0 .075	,,	— 0 .080	0	
— 0 .080	,,	— 0 .085	0	
— 0 .085	,,	— 0 .090	0	

From this table symmetrical curves were drawn; the maximum of the υ-curve lies at — 0″.011 in the direction of the Apex, that of the τ-curve at — 0″.002 in the direction S. W. Hence the phenomenon cannot be explained by parallactic motion either, since for stars of average magnitude 11^m.7, as we have here, the latter is 0″.0095 in the direction Antapex.

None of the above given possible causes seems sufficient to explain the small number of small P. M. and it remains an open question whether indeed very small P. M. are less numerous than larger ones. Much material will probably be required before a definite answer to this question can be given.

CHAPTER XV.

REMARKABLE PROPER MOTIONS.

The number of stars on the plates with large P. M. is very small. While TURNER [1] among 13.000 stars finds 123 with an annual P. M. $> 0''.150$, I among 763 stars only find 8 with an annual P. M. $> 0''.100$. These have been collected in the next table:

No.	mag.	μ''_α	μ''_δ	Kost. no.	μ''_α	μ''_δ
944	11.7	$+\ 0''.107$	$-\ 0''.034$	9	$+\ 0''.111$	$-\ 0''.043$
1024	8.9	$+\ 0\ .318$	$-\ 0\ .215$	8	$+\ 0\ .333$	$-\ 0\ .247$
1129	12.8	$-\ 0\ .107$	$-\ 0\ .052$	—		
1166	12.4	$+\ 0\ .152$	$-\ 0\ .004$	7	$+\ 0\ .173$	$-\ 0\ .023$
1370	10.3	$-\ 0\ .087$	$-\ 0\ .060$	—		
1508	9.0	$+\ 0\ .125$	$+\ 0\ .017$	3	$+\ 0\ .156$	$-\ 0\ .012$
1509	7.5	$+\ 0\ .251$	$-\ 0\ .207$	4	$+\ 0\ .284$	$-\ 0\ .231$
1530	11.3	$+\ 0\ .134$	$-\ 0\ .093$	1	$+\ 0\ .160$	$-\ 0\ .090$

In col. 5, 6 and 7 the numbers of these stars are given, as occurring in „KOSTINSKY, Ueber die Eigenbeweging der Sterne in der Umgebung der Sternhaufen h und χ Persei", A. N. 4366, and the μ''_α and μ''_δ, derived from the values there given.

These values do not very satisfactorily agree with mine. But since these P. M. were measured by KOSTINSKY by means of a stereocomparator and each of them is only referred to two faint, symmetrically situated comparison stars, and since KOSTINSKY emphasises that he looks upon his results as preliminary only, these differences did not seem to render it necessary to discuss the relative values of my method and that of the stereocomparator.

---

[1] M. N. of R. A. S. **71**, 50.

48

Kostinsky derives from his results the existence of two drifts, forming an angle of 27° ($p = 130°.6$ and $p = 103°.3$),

I must confess that neither his figures nor his diagram are, in my opinion, very convincing; for, the P.M. of the first so-called drift vary from $0''.030$ to $0''.414$ annually, of the second from $0''.044$ tot $0''.175$. Now a great part of this P. M. should be ascribed to the parallactic motion, for which $p = 133°$. There is little reason to see in these stars two physically connected groups, although it is possible that some of them form a physical system, as e. g. 1024 and 1509, for which Kapteyn and de Sitter also found fairly equal parallaxes, namely $+ 0''.12$ and $+ 0''.13$ [1]).

CHAPTER XVI.

Final conclusions.

Summarising the obtained results, I think it may be said that in chapters V and XI it has been sufficiently proved that the method here followed may give very accurate results and compares favourably with other methods.

Kapteyn's method, in which the images of both epochs are contained in one plate seems to be, at the first glance, the method giving the greatest possible accuracy with the least possible labour. But on the other hand the non-developing of the plates implies the use of an interval that has not yet begun and therefore the method can never avail itself of earlier plates, whereas in my method any early plate after the „Carte du Ciel" pattern may even now be combined with any other plate of the same region as soon as it is taken.

That I could not make out which stars belong to the clusters h and χ Persei (Cf. Chapter XII), must be ascribed to the very small P.M. of these groups themselves.

The second aim of this investigation, the determination of the frequency

[1]) Publ. of the Astr. Lab. at Groningen, **10**, table 5.

of the P. M. according to brightness and amount of P. M., may be said tot have been reached for 763 stars.

In Chapter XIV I drew attention to the low number of small P. M. It was also investigated there whether this phenomenon may be ascribed to :

1. inaccurate values of $\Delta\mu''_\alpha$ and $\Delta\mu'_\delta$;
2. an incorrect system, to which the P. M. were reduced;
3. the parallactic motion;

and it was proved that none of these three possible explanations accounts for the shifting of the zero-point of P. M.

I further examined whether these small P. M. possibly lie in the direction of one of KAPTEYN's two star drifts. For the centre of the plate the position angle (as asually counted from N. to E.) of the drifts are 122° and 240°. whereas the P. M. found by me, besides having a maximum, pretty well coinciding with the direction of the parall. P. M. (for which $p = 133°$.) show a second maximum for $p = 302°$. Hence also the two drift theory cannot account for this second maximum.

Although it is still possible that this curious phenomenon is caused by a magnitude error, since $\Delta\mu''_\alpha$ and $\Delta\mu''_\delta$ were determined from the P. M. of very bright stars (which point cannot be settled with the material at my disposal) and although consequently it cannot be said with certainty that this maximum of P. M. is real, it deserves to be mentioned all the more since it is in a direction parallel to the Milky Way and approximately towards the Apex. It is much to be desired that more certainty on this point could be obtained, unless it should appear that the above mentioned causes singly or combined are the true reason. It is therefore to be hoped that within a reasonable time similar material may be available for other parts of the sky in order to be able to settle whether perhaps we have here a drift of faint stars (the average mag. is 11.7), not coinciding with the drifts known at present, or whether we must think of a rotation parallel to the Milky Way, as was already suggested by SCHÖNFELD [1]).

[1]) V. J. S. **17**, 255.

EXPLANATION OF THE TABLES.

The tables will require little explanation. Next to the current numbers the diameters are given, from which the magnitudes were derived in Chapter XIII.

The columns 3—8 contain the values M_1 M_2 M_3 (See Chapter IV);

,, ,, 9—14 ,, ,, ,, m_1 m_2 m_3 (,, ,, VI);

,, ,, 22—27 ,, ,, ,, μ_1 μ_2 μ_3 (,, ,, VIII),

which, averaged with the weights 1, 1 and 2, furnish the final relative P. M. μ''_α and μ''_δ. In order to obtain the absolute P. M. the corrections $\Delta \mu''_\alpha$ and $\Delta \mu''_\delta$ which were calculated in Chapter X must be applied. These corrections are given at the foot of each page of the tables. The sign ⁑ after these stars indicates an uncertainty in the measurements, generally caused by vagueness or oblongness of the images.

Under x and y the rectangular coordinates of the stars are found, referred to the middle of the plates: $\alpha = 2^h\ 12^m\ 3^s.5$, $\delta = 56°33'$. These coordinates are given to $0^p.1$, p being about $1'$.

Under the heading B. D. or Br. and St. we find either the number in the Bonn Durchmusterung or, for stars not included in this catalogue, the current numbers, to be found in „Les Positions des étoiles de h et χ Persei et de leurs environs" by MISS BRONSKY and MISS STEBNITZKY (Mém. de l'Ac. Imp. des Sciences de St. Pétersbourg, série VIII, 2, nr. 7). The B. D. stars occurring also in this paper are marked with an asterisk. Under α 1900.0 and δ 1900.0 we finally have the positions of the stars for the equinox 1900.0, α being given to 1^s and δ to $0'.1$. As far as these were measured by the Misses BRONSKY and STEBNITZKY, α and δ have been derived from their values; for the remaining stars they were calculated from x and y. Since the coordinates α and δ are only given to identify the stars, great accuracy was not wanted.

TABLES

No.	diameter	α			δ			α			δ			z	γ
		M₁	M₂	M₃	M₁	M₂	M₃	m₁	m₂	m₃	m₁	m₂	m₃		
	z = 2h 19m 1s to α = 2h 19m 17s														
1	0r.674	+ 0r.032	+ 0r.028	+ 0r.094	− 0r.103	− 0r.085	+ 0r.107	+ 0″.031	− 0″.002	+ 0″.023	− 0″.073	− 0″.023	+ 0″.007	− 59p.2	− 18p.1
2	0.630	+ 5	+ 44	+ 185	− 126	− 91	+ 66	+ 17	+ 6	+ 53	− 82	− 27	− 7	− 58.3	− 17.6
3	0.818	+ 44	− 36	+ 9	− 4	− 25	+ 76	+ 35	− 31	− 9	− 20	+ 1	+ 4	− 57.5	− 12.9
4	0.758	− 9	− 50	+ 72	− 8	− 58	+ 99	+ 11	− 38	+ 14	− 21	− 17	+ 16	− 58.4	− 11.4
5	1.620	+ 110	− 9	+ 1	− 2	− 53	+ 12	+ 70	− 19	− 11	− 16	− 17	− 10	− 59.0	− 7.8
6	0.650	− 193	− 22	− 48	+ 21	− 35	+ 24	− 79	− 24	− 31	+ 2	− 14	+ 1	− 57.8	− 2.3
7	1.292	+ 6	+ 9	− 16	− 27	− 56	0	+ 20	− 9	− 19	− 18	− 27	− 3	− 59.1	+ 1.9
8	0.634	− 186	+ 12	− 57	− 50	+ 9	− 9	− 71	− 7	− 34	− 22	0	− 4	− 60.3	+ 8.1
9	1.172	+ 30	+ 60	+ 89	− 123	− 34	− 56	− 35	+ 16	+ 17	− 56	− 22	− 17	− 60.0	+ 8.9
10	0.827	− 107	+ 9	− 54	− 20	− 8	+ 24	− 33	− 8	− 33	− 3	− 11	+ 11	− 58.7	+ 10.0
	α = 2h 18m 12s to α = 2h 18m 59s.														
11	0.718	+ 131	+ 164	+ 267	− 135	− 99	+ 105	+ 70	+ 68	+ 82	− 87	− 27	− 7	− 53.0	− 24.5
12	1.391	+ 69	+ 11	+ 57	− 32	− 123	+ 116	+ 42	− 7	+ 8	− 38	− 38	− 2	− 54.5	− 24.3
13	0.816	+ 18	− 2	+ 32	− 23	− 52	+ 108	+ 15	− 13	− 1	− 32	− 7	− 1	− 52.8	− 21.8
14	0.714	− 74	− 2	+ 49	− 72	− 78	+ 127	− 25	− 14	+ 5	− 56	− 20	+ 9	− 54.4	− 20.4
15	0.988	+ 19	+ 7	+ 73	− 28	− 76	+ 87	+ 19	− 10	+ 13	− 34	− 19	− 4	− 55.1	− 20.2
16	0.823	+ 22	+ 41	+ 61	− 95	− 96	+ 61	+ 19	+ 7	+ 9	− 66	− 30	− 12	− 55.1	− 19.3
17	0.698	− 18	+ 79	+ 150	− 95	− 158	+ 54	+ 2	+ 25	+ 40	− 65	− 62	− 9	− 55.7	− 16.3
18	0.647	− 93	− 16	+ 68	− 98	− 76	+ 125	− 32	− 21	+ 12	− 67	− 22	+ 18	− 57.1	− 14.8
19	1.248	+ 73	− 11	+ 6	+ 7	− 84	+ 26	− 45	− 18	− 11	− 13	− 29	− 14	− 54.4	− 13.7
20	1.072	+ 106	− 2	− 11	− 7	− 85	+ 78	+ 61	− 13	− 17	− 19	− 30	+ 4	− 54.3	− 13.1
21	0.721	− 84	− 7	+ 27	− 17	− 40	+ 92	− 28	− 17	− 3	− 25	− 8	+ 12	− 56.9	− 11.9
22	0.790	+ 36	+ 5	+ 23	− 4	− 34	+ 40	− 25	− 9	− 6	− 15	− 8	− 5	− 52.7	− 11.3
23	1.055	+ 75	− 18	+ 33	+ 30	− 38	+ 6	+ 47	− 21	− 2	+ 1	− 11	− 14	− 55.2	− 9.2
24	0.626	− 63	− 35	+ 22	− 20	− 34	+ 29	− 18	− 30	− 5	− 24	− 8	− 6	− 56.8	− 8.9
25	0.730	+ 3	+ 14	+ 16	+ 38	− 27	+ 55	+ 9	− 4	− 8	+ 7	− 7	+ 3	− 53.1	− 8.9
26	0.980	+ 51	− 4	+ 27	+ 25	− 18	+ 5	− 37	− 15	− 3	− 1	− 1	− 14	− 55.8	− 8.4
27	0.884	+ 102	+ 31	+ 52	− 3	− 22	+ 2	+ 61	− 3	+ 5	− 12	− 5	− 12	− 55.5	− 6.1
28	1.078	+ 54	− 9	+ 23	+ 7	− 34	+ 13	+ 35	− 15	− 7	− 6	− 12	− 8	− 53.4	− 5.9
29	0.970	+ 38	− 11	+ 20	+ 25	− 36	+ 61	+ 30	− 17	− 7	+ 3	− 14	+ 10	− 55.1	− 4.6
30	0.566	− 79	+ 8	− 86	− 16	+ 19	+ 62	− 29	− 6	− 45	− 11	+ 8	+ 16	− 53.3	+ 0.2
32	0.632	− 121	− 21	− 39	+ 18	+ 9	+ 53	− 45	− 22	− 28	+ 6	+ 3	+ 15	− 55.9	+ 1.6
33	0.782	− 47	+ 122	+ 82	+ 65	+ 80	+ 38	− 7	+ 48	+ 13	+ 35	+ 33	+ 14	− 56.4	+ 7.2
34	0.882	− 72	+ 35	+ 46	+ 46	+ 25	− 10	− 20	+ 6	− 33	− 14	+ 3	− 1	− 55.6	+ 11.0
35	0.698	− 160	− 2	− 127	+ 57	+ 68	+ 1	− 62	− 10	− 62	− 7	+ 17	+ 5	− 54.6	+ 18.2
36	0.695	− 165	+ 40	− 46	− 74	+ 58	+ 1	− 62	+ 9	− 34	− 15	+ 12	+ 5	− 56.5	+ 18.8
37	0.632	− 106	+ 21	− 45	− 86	+ 64	− 11	− 37	+ 1	− 34	− 19	+ 14	+ 1	− 53.0	+ 19.4
38	0.620	− 212	− 34	− 14	− 96	+ 42	− 90	− 83	− 27	− 22	− 25	+ 4	− 27	− 57.6	+ 19.8
39	0.542	− 193	+ 26	− 37	− 21	+ 82	− 32	− 75	+ 2	− 31	+ 18	+ 20	− 7	− 55.9	+ 22.9
39*	2.063	− 17	− 22	+ 54	− 178	+ 40	− 101	+ 10	− 19	− 2	− 43	− 7	− 33	− 51.8	+ 30.0
	α = 2h 17m 47s to α = 2h 18m 23s.														
40	0.945	+ 61	+ 14	+ 51	+ 35	− 138	+ 243	+ 27	− 2	+ 6	− 2	− 37	+ 7	− 47.3	− 37.7
42	0.539	+ 96	+ 45	+ 90	− 132	− 112	+ 311	− 44	+ 11	+ 19	− 85	− 29	+ 47	− 50.4	− 32.1
43	0.666	− 40	+ 31	+ 91	− 48	− 74	+ 228	− 22	+ 6	+ 19	− 42	− 12	+ 17	− 47.2	− 31.9
44	0.642	− 56	− 48	+ 108	− 59	− 70	+ 255	− 28	− 33	+ 25	− 49	− 10	+ 29	− 48.5	− 30.7
45	0.560		− 15	+ 10	− 17	− 154	+ 194		− 17	− 16	− 28	− 54	+ 18	− 49.2	− 27.2
46	0.600	− 65	− 8	+ 24	− 60	− 35	+ 181	− 30	− 14	− 4	− 49	+ 4	+ 13	− 50.1	− 26.7
47	0.761	+ 60	0	+ 44	+ 1	− 85	+ 123	+ 27	− 8	+ 2	− 17	− 24	− 3	− 47.2	− 24.9
48	0.876	− 7	− 29	+ 17	− 20	− 84	+ 123	0	− 24	− 7	− 27	− 26	+ 8	− 50.9	− 20.1
49	0.767	+ 25	+ 11	+ 73	− 43	− 63	+ 107	+ 16	− 5	+ 12	− 39	− 16	+ 2	− 50.8	− 19.7
50	0.665	− 17	− 1	+ 28	+ 12	− 19	+ 130	− 3	− 12	− 3	− 12	+ 6	+ 13	− 52.1	− 18.6
51	0.628	− 50	+ 8	+ 23	− 52	− 39	+ 88	− 18	− 7	− 6	− 41	− 7	+ 5	− 52.0	− 15.3
52	0.784	+ 29	+ 1	+ 34	+ 33	− 56	+ 39	+ 16	− 9	− 3	+ 3	− 18	− 10	− 48.9	− 13.9
53	0.758	+ 3	− 14	+ 38	+ 47	+ 2	+ 70	+ 6	− 16	− 1	+ 11	+ 8	+ 5	− 50.9	− 11.0
54	0.698	+ 32	+ 45	− 8	− 19	+ 47	+ 72	+ 19	+ 13	− 17	− 20	− 17	+ 7	− 49.8	− 10.2
55	0.543	+ 46	+ 3	+ 66	+ 38	− 3	+ 6	+ 26	− 7	+ 7	+ 13	0	− 9	− 48.7	− 5.2
56	0.534	− 36	+ 26	+ 83	+ 36	+ 12	+ 38	− 13	+ 3	+ 13	+ 12	+ 7	+ 2	− 50.0	− 5.1
58	0.844	+ 81	+ 31	+ 100	+ 1	− 27	+ 31	+ 42	+ 7	+ 19	− 3	− 14	+ 1	− 47.9	− 3.6
59	0.503	− 6	+ 13	+ 9	+ 15	− 43	+ 3	+ 2	− 1	+ 13	+ 4	− 22	− 7	− 49.5	− 2.0
60	0.541	− 52	− 26	+ 16	+ 46	− 46	− 17	− 18	− 22	− 22	+ 23	− 26	− 10	− 51.0	+ 1.7
61	0.638	− 19	+ 30	+ 3	+ 25	− 33	+ 46	− 3	+ 6	− 16	+ 11	+ 12	+ 12	− 50.1	+ 2.0
62	0.532	− 63	+ 7	+ 24	+ 37	+ 50	+ 46	− 24	− 5	− 8	+ 20	+ 19	+ 13	− 50.3	+ 3.3

No.	B.D. or Br.—St.	Mag.	α (1900.0)	δ	α μ₁	α μ₂	α μ₃	δ μ₁	δ μ₂	δ μ₃	μ''ₐ	μ''ᵨ
	α = 2ʰ 19ᵐ 1ˢ to α = 2ʰ 19ᵐ 17ˢ											
1	1297	11.9	2ʰ 19ᵐ 15ˢ	56° 56'.9	+ 0".039	− 0".007	+ 0".009‡	− 0".060‡	− 0".019	− 0".004‡	+ 0".012	− 0".022
2	1287	12.3	19 8	56.3	+ 25	+ 1	+ 40‡	− 70‡	− 23	− 17‡	+ 26	− 32
3	1276	11.0	19 1	51.6	+ 43	− 36	− 22‡	− 8‡	+ 5	− 5‡	− 9	− 3
4	1286	11.3	19 7	50.2	+ 20	− 43	+ 1‡	− 9‡	− 13	+ 7‡	− 5	− 2
5	56°.621†	7.7	19 11	46.6	+ 79	− 25	− 24‡	− 3‡	− 13	− 19‡	+ 2	− 13
6	1682	12.1	19 1	41.2	− 70	− 30	− 44‡	+ 14‡	− 11	− 6‡	− 47	− 2
7	56°.620†	8.7	19 10	37.0	+ 29	− 16	− 32‡	− 5‡	− 24	− 10‡	− 13	− 12
8		12.2	19 17	30.8	− 62	− 14	− 47‡	− 9‡	+ 3	− 2‡	− 42	− 2
9	1684a	9.2	19 15	30.0	+ 44	+ 9	+ 4‡	− 43‡	− 19	− 23‡	+ 15	− 27
10	1283	10.9	19 6	28.9	+ 24	− 15	− 46‡	+ 9‡	− 9	+ 6‡	− 33	+ 3
	α = 2ʰ 18ᵐ 12ˢ to α = 2ʰ 18ᵐ 59ˢ.											
11	1218	11.6	18ᵐ 31ˢ	57° 3'.3	+ 77	+ 64	+ 71‡	− 78‡	− 22	− 15‡	+ 71	− 32
12	56°.616†	8.4	18 42	3.1	+ 49	− 11	− 4‡	− 28‡	− 33	− 10‡	+ 8	− 20
13	1212	10.9	18 29	0.6	+ 22	− 17	− 12‡	− 23‡	− 2	− 9‡	− 5	− 11
14	1233	11.6	18 40	56° 59'.3	+ 18	− 18	− 6‡	− 46‡	+ 15	+ 1‡	− 12	− 15
15	56°.615†	10.1	18 45	59.0	+ 26	− 14	+ 1‡	− 24‡	− 14	− 13‡	+ 4	− 16
16	1245	10.9	18 45	58.1	+ 26	+ 3	− 3‡	− 56‡	− 25	− 21‡	+ 6	− 31
17	1254	11.7	18 48	55.2	+ 10	+ 20	+ 28‡	− 55‡	− 58	− 18‡	+ 21	− 37
18	1269	12.1	18 59	53.6	− 24	− 26	− 0‡	− 56‡	− 18	+ 9‡	− 13	− 14
19	56°.613†	8.9	18 39	52.6	+ 53	− 23	− 22‡	− 3‡	− 25	− 22‡	− 3	− 18
20	56°.612†	9.6	18 38	52.0	+ 69	− 18	− 28‡	− 9‡	− 26	− 4‡	− 1	− 11
21	1266	11.6	18 57	50.6	− 20‡	− 22	− 15‡	− 14‡	− 4	+ 4‡	− 18	− 2
22	1205	11.1	18 26	50.2	+ 33	− 14	− 17‡	− 6‡	− 4	− 12‡	− 4	− 8
23	56°.617†	9.7	18 43	48.1	+ 55	− 26	− 13‡	+ 11‡	− 7	− 21‡	+ 1	− 9
24	1263	12.3	18 55	47.8	− 10	− 35	− 17‡	− 13‡	− 4	− 14‡	− 20	− 11
25	1210	11.5	18 28	47.9	+ 17	− 9	− 19‡	+ 16‡	− 3	− 3‡	− 7	+ 2
26	56°.618†	10.1	18 48	47.2	+ 45	− 20	− 15‡	+ 9‡	+ 3	− 21‡	− 1	− 8
27	1247	10.6	18 46	45.0	+ 69	− 3	− 7‡	− 2‡	+ 1	− 19‡	+ 13	− 10
28	56°.611†	9.6	18 31	44.8	+ 43	− 21	− 18‡	+ 4‡	− 8	− 14‡	− 3	− 8
29	56°.614†	10.1	18 42	43.5	+ 38	− 23	− 18‡	+ 13‡	− 10	+ 4‡	− 5	+ 3
30	1213	12.9	18 29	38.8	− 21‡	− 12‡	− 56‡	− 2‡	+ 11	+ 11‡	− 36	+ 8
32		12.3	18 46	37.4	− 37	− 28‡	− 39‡	+ 16‡	+ 6	+ 10‡	− 36	+ 10
33	1255	11.2	18 49	31.8	+ 1	+ 41	+ 1‡	+ 45‡	+ 36	+ 9‡	+ 11	+ 25
34	1240	10.6	18 43	28.0	− 12	− 1	− 44‡	− 4‡	+ 6	− 5‡	− 25	− 2
35	1223	11.7	18 35	20.8	− 55	− 17	− 73‡	+ 2‡	+ 19‡	+ 3‡	− 54	+ 7
36	1252	11.8	18 48	20.3	− 55‡	+ 2	− 45‡	− 5‡	+ 14	+ 3‡	− 36	+ 4
37	1202	12.3	18 23	19.7	− 30	− 6	− 44‡	− 11‡	+ 16	− 0‡	− 31	+ 1
38	1681	12.4	18 56	19.2	− 76	− 35	− 34‡	− 14‡	+ 6	− 29‡	− 45	− 16
39	1242	13.0	18 43	16.2	− 68	− 6	− 42‡	+ 27‡	+ 22	− 8‡	− 40	+ 8
39*	55°.612†	6.5	18 12	9.4	+ 15	− 26	− 12‡	− 36‡	− 6	− 31‡	− 9	− 26
	α = 2ʰ 17ᵐ 47ˢ to α = 2ʰ 18ᵐ 23ˢ.											
40	57°.563†	10.3	2ʰ 17ᵐ 51ˢ	57° 16'.5	+ 32	− 4	− 4‡	+ 4‡	− 31	+ 2‡	+ 5	− 6
42	1670	13.1	18 13	10.9	− 39‡	+ 8‡	+ 9	− 77‡	− 24	+ 40‡	− 3	− 5
43	1154	12.0	17 49	10.8	− 17	+ 3	+ 9	− 36	− 7	+ 12‡	− 1	− 5
44	1666	12.2	17 59	9.6	− 23	− 36	+ 15	− 42	− 5‡	+ 23‡	− 7	− 0
45	1163	12.9	18 3	6.1	− 20		− 26‡	− 21‡	+ 49‡	+ 12‡	− 24	− 11
46	1175	12.5	18 10	5.5	− 24‡	− 17	− 14	− 41‡	+ 9	+ 7‡	− 17	− 4
47	1152	11.3	17 48	3.9	+ 33	− 11	− 7	− 10	− 19	− 9‡	+ 2	− 12
48	56°.609†	10.6	18 14	56° 59'.0	+ 7	− 28	− 17	− 19	− 21	+ 1‡	− 14	− 9
49	1185	11.3	18 12	58.6	+ 23	− 9	+ 2	− 31	− 11	− 5‡	+ 4	− 13
50	1201	12.0	18 23	57.4	+ 4‡	− 16	− 14	− 3	+ 11	+ 6‡	− 10	+ 5
51	1198	12.3	18 21	54.2	− 11	− 11	− 16	− 32	− 3	− 2	− 14	− 10
52	1160a	11.2	17 59	52.9	+ 23	− 13	− 12	+ 10	− 14	15	− 3	− 8
53	1184	11.3	18 12	50.0	+ 13	− 21	− 11	+ 19	+ 12	1	+ 8	+ 7
54	1166	11.7	18 5	49.2	+ 26	+ 8	− 27	− 12	− 13	+ 2	− 5	− 5
55	1159	13.0	17 56	44.3	+ 33	− 12	− 2	+ 20	+ 4	13	+ 4	− 0
56	1167	13.1	18 5	44.1	− 6	− 2	+ 4	+ 19	+ 11	− 2	− 0	+ 6
58	1156	10.8	17 50	42.6	+ 49	+ 2	+ 10	+ 4	− 10	− 3	+ 18	− 3
59	1667	13.4	18 1	41.0	+ 9	− 6	− 22	+ 11	− 18	− 11	− 10	− 7
60	1182	13.0	18 12	37.4	− 11	− 28	− 32	+ 31	− 23	− 14	− 26	− 5
61		12.2	18 5	37.0	+ 4	0	− 25‡	− 4	+ 15	+ 8	− 11	+ 7
62	1169	13.1	18 6	35.7	− 17‡	− 11	− 17	+ 27	+ 22	+ 10	− 15	+ 17

Reduction to absolute P.M.: Δ μ''ₐ = − 0".006; Δ μ''ᵨ = + 0".007.

No.	diameter	α			δ			α			δ			x	γ
		M_1	M_2	M_3	M_1	M_2	M_3	m_1	m_2	m_3	m_1	m_2	m_3		
63	$0^r.942$	$+\,0^r.107$	$+\,0^r.089$	$+\,0^r.143$	$-\,0^r.017$	$-\,0^r.036$	$-\,0^r.016$	$+\,0''.057$	$+\,0''.035$	$+\,0''.033$	$-\,0''.004$	$-\,0''.024$	$-\,0''.008$	$-\,47^p.7$	$+\,3^p.4$
64	0.623	− 39	− 33	+ 37	− 50	+ 22	− 36	− 12	− 24	− 5	− 14	0	− 12	− 49.3	+ 9.3
65	0.629	− 44	+ 15	− 24	− 53	+ 34	+ 23	− 15	0	− 27	− 13	+ 3	+ 10	− 48.1	+ 10.8
66	0.884	− 38	+ 9	− 112	− 58	+ 53	− 19	− 9	− 4	+ 20	− 10	+ 10	+ 10	− 49.1	+ 14.9
67	0.630	− 145	+ 7	− 19	+ 30	+ 52	+ 10	− 59	− 5	− 25	+ 32	+ 11	+ 7	− 52.3	+ 14.9
68	1.114	− 5	− 2	+ 60	− 94	+ 6	+ 43	+ 10	− 10	+ 2	− 29	− 12	+ 19	− 51.9	+ 15.1
69	0.694	− 92	+ 39	+ 59	− 45	+ 68	+ 33	− 35	+ 11	+ 1	+ 1	+ 15	+ 15	− 48.8	+ 17.9
70	0.674	− 78	− 16	+ 13	− 42	+ 48	+ 9	− 28	− 16	− 15	+ 3	+ 5	+ 7	− 48.5	+ 18.3
71	0.620	− 135	+ 28	− 7	+ 24	+ 60	− 19	− 52	+ 5	− 22	+ 41	+ 8	+ 11	− 50.9	+ 21.9
72	0.634	− 8	+ 91	+ 50	− 15	− 8	− 3	+ 7	+ 37	− 2	− 25	− 27	+ 2	− 48.3	+ 23.3
73	0.608	− 185	+ 29	− 17	− 36	+ 76	− 38	− 77	+ 6	− 14	+ 18	+ 13	− 9	− 50.0	+ 25.0
75	0.598	− 134	+ 35	+ 4	− 82	+ 100	− 23	− 48	+ 9	− 20	+ 10	+ 18	− 8	− 49.9	+ 33.2
76	0.588	− 154	+ 25	+ 57	− 52	+ 103	− 2	− 59	− 20	− 2	+ 28	+ 19	− 0	− 48.6	+ 33.9
77	0.526	− 80	− 46	− 20	− 16	+ 110	+ 25	− 22	− 31	− 29	+ 46	+ 22	+ 8	− 48.4	+ 34.6
	$\alpha = 2^h\,17^m\,12^s$ to $\alpha = 2^h\,17^m\,44^s.$														
80	0.563	− 128	− 25	+ 151	− 76	− 120	+ 369	− 67	− 20	+ 40	− 55	− 29	+ 47	− 45.2	− 39.3
81	0.670	− 76	− 11	+ 69	− 133	− 89	+ 328	− 43	− 13	+ 12	− 82	− 15	+ 33	− 43.9	− 38.8
82	1.121	+ 104	+ 101	+ 194	− 5	− 136	+ 174	+ 43	+ 43	+ 54	− 19	− 39	− 16	− 43.2	− 37.0
83	0.803	− 2	− 16	+ 88	+ 8	− 101	+ 253	− 5	− 16	+ 18	− 15	− 23	+ 18	− 46.1	− 35.3
84	0.829	− 12	− 2	+ 84	− 25	− 101	+ 162	− 12	− 8	+ 16	− 29	− 27	− 6	− 44.0	− 32.1
85	0.532	− 9	+ 33	+ 53	− 24	− 65	+ 95	− 7	+ 8	+ 5	− 27	− 17	− 9	− 45.8	− 22.9
86	0.670	+ 8	− 41	+ 55	− 39	− 61	+ 41	+ 1	− 26	+ 5	− 33	− 17	− 25	− 43.3	− 22.1
87	1.072	+ 47	− 4	+ 52	+ 46	− 96	+ 77	+ 20	− 9	+ 4	+ 6	− 32	− 13	− 46.0	− 21.7
88	0.626	+ 8	+ 27	− 13	− 20	− 57	+ 73	− 3	+ 8	− 10	− 22	− 17	− 12	− 42.4	− 20.7
89	0.791	− 10	− 66	− 43	− 10	− 88	+ 38	− 6	− 39	− 30	− 8	− 34	− 15	− 46.7	− 16.4
90	0.709	+ 54	+ 11	+ 74	+ 1	− 18	+ 96	+ 23	− 1	+ 11	− 12	0	+ 5	− 45.3	− 15.9
91	0.834	+ 48	+ 37	+ 75	+ 46	− 17	+ 59	+ 21	+ 11	+ 11	+ 11	0	− 6	− 45.9	− 14.9
92	0.971	+ 35	+ 40	+ 22	+ 30	− 68	+ 47	+ 16	− 27	− 8	− 25	− 26	− 8	− 46.3	− 13.5
93	0.656	+ 42	+ 63	+ 106	− 12	− 12	+ 86	+ 17	+ 24	− 22	− 15	0	+ 6	− 43.9	− 12.7
94	0.535	− 17	− 17	+ 65	+ 5	− 8	+ 78	− 9	− 16	+ 7	− 8	+ 2	+ 6	− 46.5	− 12.2
95	0.671	+ 66	+ 37	+ 41	− 23	− 21	+ 20	+ 27	+ 13	− 2	− 16	− 10	− 9	− 42.6	− 7.7
97	0.590	+ 34	+ 35	+ 36	+ 6	+ 32	+ 73	+ 12	+ 11	− 4	− 1	+ 15	+ 11	− 42.7	− 6.8
98	0.708	+ 26	+ 12	+ 58	+ 6	+ 31	+ 55	+ 11	− 1	+ 4	− 8	+ 16	+ 5	− 44.7	− 6.8
99	1.061	+ 88	+ 22	+ 58	− 1	+ 22	+ 53	+ 41	+ 4	+ 4	− 6	+ 10	+ 4	− 45.5	− 6.7
100	0.671	− 19	+ 24	+ 32	+ 22	− 11	+ 5	− 8	+ 4	− 6	+ 10	− 9	− 6	− 46.3	− 1.6
101	0.698	+ 53	+ 13	+ 19	+ 17	+ 40	+ 52	+ 29	− 1	− 10	− 3	+ 11	+ 16	− 46.5	+ 4.3
102	0.638	− 31	+ 63	+ 1	− 22	+ 49	+ 9	− 14	+ 24	− 17	− 3	+ 14	+ 1	− 45.1	+ 5.0
103	0.812	+ 59	+ 15	+ 52	− 11	+ 5	− 26	+ 30	0	− 0	+ 3	− 8	+ 8	− 45.0	+ 5.8
104	0.968	+ 40	+ 29	+ 14	− 34	+ 12	+ 60	+ 23	+ 7	− 13	− 7	− 5	+ 21	− 46.5	+ 6.9
105	0.697	− 6	+ 40	+ 27	− 24	+ 32	− 8	− 3	+ 14	− 9	− 0	+ 2	− 3	− 43.1	+ 7.9
106	0.924	+ 6	+ 65	+ 33	− 55	+ 16	+ 16	+ 5	+ 25	− 7	− 15	− 5	− 6	− 45.2	+ 9.2
107	0.581	− 34	+ 58	+ 21	− 14	+ 17	+ 26	− 12	+ 21	− 10	+ 7	− 6	+ 11	− 46.4	+ 10.7
108	0.849	− 5	+ 25	− 28	− 63	+ 49	+ 2	− 0	+ 6	− 28	− 12	+ 7	+ 3	− 43.3	+ 12.6
109	0.750	− 39	− 7	+ 6	+ 5	+ 38	− 8	− 14	− 11	− 17	+ 21	+ 2	− 0	− 45.4	+ 13.5
110	0.647	− 28	+ 55	− 22	− 47	+ 68	+ 47	− 11	+ 20	− 27	− 3	+ 16	+ 19	− 43.7	+ 14.3
111	0.688	− 6	− 0	+ 33	− 81	+ 45	− 14	+ 2	− 7	− 7	− 17	+ 3	− 1	− 44.5	+ 16.1
112	0.706	− 66	+ 42	+ 69	− 0	+ 52	+ 13	− 25	+ 13	+ 5	+ 25	+ 6	− 8	− 46.2	+ 17.8
113	0.536	− 60	+ 30	− 24	+ 42	+ 91	+ 121	− 21	+ 7	− 28	+ 9	+ 23	+ 46	− 46.1	+ 20.8
115	0.568	− 94	+ 8	+ 1	+ 40	+ 86	− 23	− 34	− 4	− 20	+ 20	+ 16	− 5	− 46.8	+ 26.9
116	0.684	− 62	+ 25	− 13	− 68	+ 62	− 19	− 19	− 4	− 25	+ 8	+ 3	+ 9	− 47.6	+ 27.7
117	0.751	− 25	+ 70	+ 165	− 35	+ 33	− 19	+ 1	+ 26	+ 36	+ 27	− 12	− 5	− 47.7	+ 29.6
118	0.623	− 96	− 5	+ 59	− 124	+ 111	− 18	− 35	− 10	− 1	− 8	+ 22	− 6	− 44.3	+ 32.8
119	0.692	− 46	+ 14	+ 50	− 78	+ 68	− 8	− 9	− 1	− 5	− 17	0	− 3	− 44.9	+ 33.8
120	0.545	− 14	+ 8	− 28	− 146		+ 9	+ 8	− 4	− 32	− 6		− 1	− 43.7	+ 39.3
	$x = 2^h\,16^m\,36^s$ to $\alpha = 2^h\,17^m\,10^s.$														
121	0.641	+ 33	− 31	+ 111	+ 38	− 174	+ 385	+ 3	− 19	+ 27	+ 7	− 50	+ 20	− 39.1	− 49.4
122	0.828	− 64	− 104	+ 14	− 0	− 135	+ 293	− 45	− 54	− 7	− 12	− 33	− 4	− 38.5	− 47.2
124	1.423	+ 16	− 65	+ 49	+ 81	− 145	+ 269	− 7	− 35	+ 5	+ 27	− 40	− 6	− 38.1	− 44.7
125	0.731	+ 14	+ 5	+ 122	+ 40	− 75	+ 301	− 7	− 1	+ 30	+ 6	− 12	+ 24	− 38.5	− 38.4
126	0.756	− 1	− 14	+ 148	+ 16	− 96	+ 261	− 12	− 11	+ 38	− 6	− 21	+ 12	− 40.0	− 38.2
127	0.850	− 31	− 35	+ 180	− 5	− 21	+ 239	− 25	− 22	+ 50	− 18	+ 13	− 15	− 41.4	− 34.2
128	0.982	+ 53	+ 17	+ 135	− 28	− 89	+ 100	+ 14	+ 4	+ 34	− 28	− 22	− 32	− 39.5	− 33.4

No.	B. D. or Br.—St.	Mag.	1900.0 α	1900.0 δ	α μ₁	α μ₂	α μ₃	δ μ₁	δ μ₂	δ μ₃	μ″_α	μ″_δ
63	56°.608 †	10.3	2h 17m 47s	56° 35'.7	+ 0".064	+ 0".029	+ 0".024	+ 0".002	− 0".021	− 0".011	+ 0".035	− 0".010
64	1159a	12.3	17 58	29.7	+ 5	− 30	− 14	− 7	+ 3	− 14	− 16	− 8
65	1659	12.3	17 49	28.4	− 8	− 6	− 36	− 7	+ 6	+ 8	− 22	+ 4
66	1158a	10.6	17 56	24.3	− 3	− 10	+ 11	− 4	+ 13	+ 9	+ 2	+ 7
67	1196	12.3	18 19	24.2	− 52‡	− 12	− 35‡	+ 40	+ 13	+ 5‡	− 33	+ 16
68	56°.610 †	9.5	18 16	24.0	+ 17	− 17	− 8	− 21	− 10	+ 17	− 4	+ 1
69	1158	11.8	17 53	21.3	− 29	+ 5	− 8‡	+ 7‡	+ 17‡	+ 15‡	− 10	+ 13
70	1661	11.9	17 51	20.9	− 22	− 22	− 24	+ 9	+ 7	+ 7	− 23	+ 7
71		12.4	18 8	17.3	− 46	− 2	− 32‡	+ 48	+ 10	+ 11‡	− 28	+ 20
72	1153	12.2	17 49	15.9	+ 13	+ 30	− 11	+ 31‡	− 25	+ 3‡	+ 5	+ 3
73	1162	12.5	18 1	14.2	− 72	− 1	− 23	+ 24	+ 15	− 8‡	− 30	+ 6
75	1160	12.5	17 59	6.1	− 43	+ 2	− 29‡	+ 16	+ 19	− 4‡	− 25	+ 7
76	1155	12.6	17 49	5.4	− 55	− 27‡	− 11	+ 33	+ 20	+ 4‡	− 26	+ 15
77	1658	13.2	17 48	4.7	− 18‡	− 38	− 38	÷ 51‡	+ 23	+ 13‡	− 33	+ 25

α = 2h 17m 12s to α = 2h 17m 44s.

No.	B. D. or Br.—St.	Mag.	1900.0 α	1900.0 δ	α μ₁	α μ₂	α μ₃	δ μ₁	δ μ₂	δ μ₃	μ″_α	μ″_δ
80	1136	12.8	2h 17m 36s	57° 18'.3	− 64	− 22‡	+ 31‡	− 50‡	− 23	+ 43‡	− 6	+ 3
81	1123	11.9	17 26	17.7	− 40‡	− 15	+ 3	− 77	− 9	+ 29‡	− 12	− 7
82	57°.559 †	9.4	17 21	15.9	+ 46	+ 41	+ 45	− 15	− 33	− 20‡	+ 44	− 22
83	1145	11.0	17 42	14.2	− 1	− 18	+ 9	− 9	− 17	+ 13‡	0	0
84	1122	10.9	17 26	11.0	− 8	− 10	+ 7	− 24	− 21	− 10‡	− 1	− 16
85	1650	13.1	17 38	1.9	− 2	+ 5	− 4	− 21	− 12	− 13	− 1	− 15
86	1634	11.9	17 20	1.1	+ 6	− 29	− 3	− 28	− 12	− 29	− 7	− 24
87	56°.606 †	9.6	17 39	0.8	+ 26	− 12	− 5	+ 12	− 27	− 17	+ 1	− 12
88	1623a	12.3	17 12	56° 59'.8	+ 2	+ 5	− 18	− 18	− 12	− 15	− 7	− 15
89	1146	11.1	17 43	55.6	− 0‡	− 43	− 39	− 2	− 29	− 20	− 30	− 18
90	1131	11.7	17 33	55.0	+ 29	− 5	+ 3	− 6	+ 5	+ 1	+ 7	0
91	1138	10.9	17 38	53.9	+ 27	+ 7	+ 3	+ 17	+ 5	− 10	+ 10	0
92	56°.607 †	10.1	17 40	52.6	+ 22	+ 31	− 16	− 19	− 22	− 12	− 10	− 16
93	1119	12.1	17 22	51.8	+ 23	+ 20	+ 14	− 10	+ 4	+ 3	+ 18	− 0
94	1144	13.1	17 41	51.3	− 3	− 20	− 1	− 2	+ 6	+ 2	− 6	+ 2
95	1106	11.9	17 13	46.8	+ 33	+ 9	− 9	− 12	− 6	− 12‡	+ 6	− 10
97	1107	12.6	17 12	45.9	+ 18	+ 7	− 11	+ 3	+ 19	+ 8	+ 1	+ 9
98	1125	11.7	17 27	45.8	+ 17	− 5	− 4	+ 3	+ 20	+ 2	+ 1	+ 5
99	56°.605 †	9.7	17 33	45.7	+ 48	− 1	− 4	− 1	− 6	+ 1	+ 10	− 1
100	1138a	11.9	17 38	40.7	− 1	− 1	− 14	+ 16	− 5	− 9	− 7	− 2
101	1139	11.7	17 39	34.9	+ 36	− 6	− 18	+ 3	+ 14	+ 14	− 1	+ 11
102	1127a	12.2	17 28	34.2	− 8‡	+ 19	− 25	+ 2	+ 17	− 1	− 10	+ 4
103	1126	11.0	17 28	33.5	+ 36	− 5	− 8	+ 8	− 5	+ 7	+ 4	+ 4
104	1140	10.2	17 39	32.3	+ 29	+ 1	− 21	− 2	− 2	+ 19	− 3	+ 8
105	1109	11.8	17 14	31.4	+ 3	+ 9	− 16	+ 4	+ 5	− 4	− 5	0
106	1128	10.4	17 29	30.0	+ 11	+ 20	− 15	− 10	− 2	+ 5	0	0
107	1136a	12.7	17 37	28.5	− 6‡	+ 15	− 18	+ 12	− 3‡	+ 10	− 7	+ 7
108	1111	10.8	17 15	26.7	+ 6	0	− 35	− 8	+ 10	+ 3	− 16	+ 2
109	1129	11.4	17 30	25.7	− 8	− 17	− 25	+ 26	+ 5	0	− 19	+ 8
110	1112	12.1	17 17	25.0	− 5‡	+ 14	− 34	+ 1	+ 19	+ 19	− 15	+ 14
111	1120	11.8	17 23	23.2	+ 8	− 13	− 14	− 13	+ 6	0	− 8	− 2
112	1134	11.7	17 35	21.5	− 19	+ 6	− 3‡	+ 30	+ 8	+ 9	− 5	+ 14
113	1132	13.1	17 33	18.6	− 16‡	+ 1	− 36‡	+ 14‡	+ 25	+ 47	− 22	+ 33
115	56°.610 † 1137	12.8	17 38	12.5	− 29‡	− 10‡	− 28‡	+ 24‡	+ 18‡	− 2‡	− 24	+ 9
116	1147	11.8	17 43	11.7	− 14	− 3	− 33‡	+ 12	+ 5	+ 12	− 21	+ 10
117	1148	11.4	17 44	9.8	+ 5	+ 19	+ 28‡	+ 31	− 10	− 2‡	+ 20	+ 4
118	1114	12.3	17 19	6.7	− 32‡	− 17‡	− 8‡	− 5‡	+ 23‡	− 1‡	− 16	+ 4
119	1121	11.8	17 23	5.6	− 6‡	− 8	− 12‡	− 14	+ 1	+ 2‡	− 9	− 2
120	1625	13.0	17 14	0.1	+ 10‡	− 11‡	− 39‡	− 4‡		+ 6‡	− 20	+ 3

α = 2h 16m 36s to α = 2h 17m 10s.

No.	B. D. or Br.—St.	Mag.	1900.0 α	1900.0 δ	α μ₁	α μ₂	α μ₃	δ μ₁	δ μ₂	δ μ₃	μ″_α	μ″_δ
121	1080	12.2	2h 16m 52s	57° 28'.3	+ 3	− 20	+ 19‡	− 9‡	− 44	+ 19‡	+ 5	+ 1
122	1595	10.9	16 48	26.5	− 44	− 55	− 14‡	− 10	− 27	− 6‡	− 32	− 12
124	57°.554 †	8.3	16 45	23.6	− 6	− 36	− 2	+ 29	− 34	− 8	− 11	− 5
125	1072	11.5	16 46	17.5	− 5	− 3	+ 23	+ 8	− 6	+ 22‡	+ 9	+ 11
126	1090	11.3	16 57	17.3	− 9	− 13	+ 31	− 3	− 15	+ 10‡	+ 10	0
127	1100	10.8	17 7	13.2	− 22	− 24	+ 42	− 15	+ 19	+ 12‡	+ 9	+ 7
128	57°.556 †	10.1	16 53	12.5	+ 17	+ 2	+ 27	− 25	− 16	− 35	+ 18	− 28

Reduction to absolute P.M.: Δμ″_α = − 0".006; Δμ″_δ = + 0".007.

No.	diameter	α M₁	α M₂	α M₃	δ M₁	δ M₂	δ M₃	α m₁	α m₂	α m₃	δ m₁	δ m₂	δ m₃	x	γ
129	0ʳ.868	+ 0ʳ.033	+ 0ʳ.005	+ 0ʳ.110	0ʳ.000	− 0ʳ.069	+ 0ʳ.131	+ 0″.002	− 0″.001	+ 0″.025	− 0″.013	− 0″.015	− 0″.017	− 37ᵖ.7	− 31ᵖ.8
130	0 .544	+ 36	+ 15	+ 103	+ 36	− 15	+ 64	+ 4	+ 4	+ 22	+ 6	+ 5	− 24	− 37.5	− 25.2
131	0 .690	+ 18	+ 21	+ 56	+ 16	− 32	+ 106	− 3	+ 7	+ 5	0	− 10	+ 7	− 37.7	− 17.2
132	0 .710	+ 44	+ 25	+ 23	+ 38	− 48	+ 110	+ 11	+ 8	− 7	+ 10	− 18	+ 9	− 39.5	− 16.0
134	0 .724	+ 53	− 31	+ 40	− 16	+ 2	+ 98	+ 16	− 19	− 1	− 16	+ 5	+ 7	− 39.1	− 15.2
135	1 .075	+ 41	+ 5	+ 49	+ 17	− 33	+ 61	+ 11	− 2	+ 1	0	− 11	− 6	− 40.2	− 14.8
136	0 .633	+ 42	+ 20	+ 53	− 20	− 7	+ 69	+ 10	+ 6	+ 3	− 17	0	− 1	− 39.3	− 13.7
137	0 .678	+ 27	+ 3	+ 45	+ 71	− 20	+ 50	+ 6	− 3	+ 1	+ 27	− 6	− 7	− 41.4	− 13.1
138	0 .624	+ 61	+ 13	+ 45	− 6	− 11	+ 98	+ 19	+ 2	− 1	− 9	+ 3	+ 10	− 37.7	− 12.8
139	0 .635	+ 60	+ 9	+ 41	+ 65	+ 10	+ 98	+ 22	− 1	− 1	+ 25	+ 7	+ 14	− 41.7	− 11.0
140	0 .992	+ 82	+ 12	+ 72	+ 7	− 4	+ 31	+ 32	+ 1	+ 9	− 2	− 1	− 9	− 40.2	− 10.9
141	0 .629	+ 11	+ 16	+ 93	+ 40	+ 50	+ 70	− 2	+ 3	+ 17	+ 14	+ 25	+ 5	− 40.7	− 10.4
142	0 .710	+ 54	38		− 7	+ 14		+ 21	13		7	+ 7		− 42.2	− 8.2
143	0 .585	− 28	− 2	− 34	+ 30	− 11	+ 72	− 22	− 5	− 4	+ 17	+ 3	+ 9	− 39.1	− 8.0
144	0 .966	+ 86	+ 29	+ 23	+ 34	− 2	+ 74	+ 35	+ 9	− 8	+ 14	− 2	+ 10	− 39.8	− 7.7
145	0 .528	+ 54	− 15	+ 99	+ 16	+ 3	+ 32	+ 19	− 12	+ 18	− 11	0	− 3	− 40.2	− 7.2
146	0 .714	− 2	+ 37	+ 27	+ 10	− 15	+ 42	− 8	+ 14	− 7	+ 3	− 10	+ 1	− 39.8	− 6.4
147	0 .869	+ 67	+ 10	+ 50	+ 17	+ 15	− 6	+ 25	0	− 1	+ 10	+ 4	+ 12	− 39.8	− 5.8
148	0 .682	+ 26	+ 33	+ 53	+ 22	+ 18	+ 48	+ 4	+ 12	+ 3	+ 11	+ 3	+ 4	− 38.1	− 4.6
149	0 .674	− 12	+ 64	+ 103	− 2	− 33	+ 20	− 10	+ 26	+ 19	+ 1	− 22	− 1	− 41.8	− 1.3
150	0 .983	+ 46	+ 9	+ 45	+ 5	− 30	+ 7	+ 20	− 1	− 1	+ 7	− 22	− 3	− 42.3	+ 1.1
151	0 .551	+ 38	+ 3	+ 69	+ 13	+ 40	0	+ 12	− 6	+ 7	+ 13	+ 9	− 5	− 38.6	+ 1.6
152	0 .792	+ 16	+ 20	+ 37	+ 4	+ 41	− 11	+ 4	+ 4	+ 4	+ 5	+ 10	− 8	− 41.1	+ 3.3
154	0 .560	+ 10	+ 40	− 38	+ 3	+ 24	− 3	0	+ 15	− 31	+ 10	0	− 3	− 39.6	+ 4.1
155	0 .692	+ 9	+ 45	+ 11	0	+ 56	+ 18	+ 3	+ 16	− 14	+ 10	+ 15	+ 5	− 41.9	+ 6.1
156	0 .652	+ 26	− 14	+ 75	+ 8	+ 46	+ 22	+ 9	+ 12	+ 9	+ 7	+ 10	+ 6	− 40.3	+ 6.3
157	0 .643	+ 39	− 10	− 5	+ 11	+ 34	+ 28	+ 14	− 9	+ 19	+ 7	+ 2	− 10	− 38.1	+ 7.2
158	0 .467	− 55	+ 104	+ 93	+ 49	+ 2	− 5	+ 26	+ 45	+ 51	+ 8	+ 17	0	− 42.4	+ 10.9
159	0 .629	+ 27	+ 58	+ 14	− 17	+ 52	+ 25	+ 13	+ 22	+ 14	+ 8	+ 9	+ 7	− 42.3	+ 11.0
160	0 .706	+ 8	+ 27	+ 49	− 25	+ 38	+ 23	0	+ 8	− 1	+ 5	+ 1	+ 9	− 38.5	+ 10.8
161	0 .618	− 19	0	+ 43	+ 47	+ 57	+ 23	− 9	− 6	− 3	− 3	+ 10	− 10	− 40.8	+ 13.2
164	0 .692	+ 2	+ 4	+ 26	+ 46	+ 39	+ 30	+ 3	− 4	− 10	0	0	+ 14	− 42.5	+ 15.0
165	0 .750	− 43	− 28	+ 7	+ 30	+ 87	+ 19	− 18	− 20	− 17	+ 10	+ 22	+ 10	− 42.6	+ 17.2
166	0 .850	+ 2	− 8	+ 20	+ 79	+ 59	+ 3	+ 3	− 10	− 12	+ 13	+ 8	+ 4	− 41.1	+ 17.3
167	0 .790	+ 28	+ 32	+ 34	+ 76	+ 37	− 2	+ 15	+ 10	− 7	− 6	− 6	+ 2	− 39.3	+ 19.8
168	0 .654	+ 31	− 20	+ 56	− 53	+ 54	+ 21	+ 16	+ 16	+ 1	+ 7	0	+ 11	− 38.1	+ 21.0
169	0 .761	− 10	− 16	+ 41	− 38	+ 61	− 4	− 1	+ 14	+ 5	+ 15	+ 4	+ 2	− 40.4	+ 22.0
171	0 .649	− 88	− 15	+ 37	− 37	+ 51	− 19	− 39	− 14	− 6	+ 16	0	− 3	− 40.8	+ 22.2
172	0 .619	− 38	+ 39	+ 105	− 64	+ 96	+ 29	− 15	+ 13	+ 16	+ 8	+ 18	+ 14	− 39.6	+ 25.3
173	0 .772	− 9	− 6	− 1	− 115	+ 80	− 12	0	− 10	− 20	− 13	+ 9	− 2	− 38.1	+ 27.0
174	0 .686	− 26	+ 13	+ 74	− 22	+ 79	0	− 6	0	+ 6	+ 34	+ 8	+ 2	− 38.8	+ 28.2
175	1 .112	− 24	− 37	− 3	− 77	+ 129	+ 48	− 1	− 25	− 23	+ 12	+ 32	+ 17	− 42.9	+ 31.1
176	0 .938	− 10	− 9	+ 61	− 141	+ 48	− 20	+ 6	− 12	0	− 16	− 9	− 7	− 42.6	+ 32.8
177	0 .752	− 41	+ 39	+ 99	− 78	+ 117	− 63	− 7	+ 11	+ 13	+ 24	+ 21	− 25	− 42.3	+ 36.8
178	0 .577		+ 19	+ 22		+ 73	+ 19		+ 1	− 14		0	+ 3	− 41.5	+ 36.9
179	0 .702	− 56	− 42	+ 32	− 58	+ 54	− 41	− 15	− 28	− 11	+ 37	− 11	− 19	− 40.5	+ 38.4

x = 2ʰ 15ᵐ 59ˢ to   α = 2ʰ 16ᵐ 35ˢ.

No.	diameter	α M₁	α M₂	α M₃	δ M₁	δ M₂	δ M₃	α m₁	α m₂	α m₃	δ m₁	δ m₂	δ m₃	x	γ
181	0 .683	+ 1	+ 16	+ 128	− 15	− 50	+ 403	− 19	− 8	+ 33	− 17	+ 5	+ 36	− 33.8	− 45.9
182	0 .768	+ 16	+ 35	+ 75	− 1	− 50	+ 345	− 11	+ 17	+ 14	− 11	+ 2	+ 25	− 34.2	− 43.4
183	0 .844	0	− 51	+ 130	+ 19	− 22	+ 357	− 19	− 26	+ 33	− 1	+ 15	+ 33	− 33.9	− 41.8
184	0 .646	+ 21	− 2	+ 147	+ 26	− 35	+ 414	− 11	0	+ 39	+ 3	+ 6	+ 56	− 32.2	− 41.3
186	0 .708	+ 70	+ 26	+ 102	26	− 32	+ 169	+ 17	+ 12	+ 22	− 23	0	− 2	− 33.8	− 30.9
187	0 .658	+ 65	+ 8	+ 76	32	− 29	+ 170	+ 13	+ 3	+ 14	− 26	− 1	+ 2	− 33.3	− 29.4
188	0 .988	+ 40	+ 1	+ 84	+ 5	− 46	+ 56	+ 2	− 1	+ 16	− 8	− 12	− 27	− 34.1	− 24.9
189	1 .169	+ 63	+ 15	+ 28	0	+ 4	+ 56	+ 13	+ 6	+ 4	+ 8	+ 9	− 21	− 33.2	− 21.8
190	0 .562	+ 76	+ 37	+ 51	− 19	− 5	+ 88	+ 20	+ 17	+ 4	+ 18	+ 4	− 8	− 34.1	− 21.1
191	0 .628	+ 46	+ 91	+ 97	+ 17	− 41	+ 108	+ 6	+ 42	+ 20	0	− 14	+ 1	− 34.4	− 20.3
192	0 .702	− 6	+ 13	+ 117	+ 43	− 23	+ 104	− 17	+ 3	+ 27	+ 12	− 4	0	− 36.5	− 20.2
193	0 .640	− 18	− 26	+ 68	− 28	− 14	+ 85	− 10	− 14	+ 10	− 20	− 2	− 7	− 32.3	− 19.7
194	0 .628	+ 45	− 5	0	+ 31	− 65	+ 83	+ 4	− 3	+ 14	+ 8	+ 27	− 6	− 33.3	− 19.2
195	0 .730	+ 77	+ 38	+ 72	+ 36	− 40	+ 59	+ 23	+ 16	+ 11	+ 10	+ 15	− 12	− 35.4	− 17.9

No.	B. D. or Br.—St.	Mag.	1900.0 α	1900.0 δ	α μ₁	α μ₂	α μ₃	δ μ₁	δ μ₂	δ μ₃	μ''_α	μ''_δ
129	1066	10.7	2ʰ 16ᵐ 40ˢ	57° 10'.9	+ 0".005	− 0".003	+ 0".018	− 0".011	− 0".009	− 0".019	+ 0".009	− 0".014
130	1591	13.0	16 37	4.4	+ 8	+ 1	+ 16	+ 8	+ 10	− 26	+ 10	− 8
131	1063	11.8	16 38	56° 56'.5	+ 2	+ 4	− 1	+ 2	+ 5	+ 5	+ 1	+ 2
132	1077	11.7	16 51	55.2	+ 16	+ 5	− 13	+ 13	− 13	+ 7	− 1	+ 3
134	1074a	11.6	16 48	54.4	+ 21	− 22	− 7	− 13	+ 10	+ 5	− 4	+ 2
135	56°.602 †	9.6	16 56	53.9	+ 16	− 5	− 6	+ 3	− 6	− 8	0	− 5
136	1074b	12.3	16 49	52.9	+ 15	+ 2	− 3	− 14	+ 5	− 3	+ 3	− 4
137	1095	11.9	17 4	52.2	+ 12	− 7	− 6	+ 31	− 1	− 9	− 2	+ 3
138	1062	12.3	16 37	52.0	+ 24	− 2	− 5	− 7	+ 2	+ 8	+ 3	+ 3
139	1097	12.2	17 7	50.2	+ 28	− 5	− 8	+ 29	+ 11	+ 12	+ 2	+ 16
140	56°.603 †	10.0	16 56	50.1	+ 38	− 3	+ 2	+ 1	+ 3	− 11	+ 10	− 4
141	1091	12.3	16 59	49.6	+ 4‡	− 1	+ 10	+ 17	+ 29	+ 3	+ 6	+ 13
142		11.7	17 10	47.4	+ 27	+ 9		− 3	+ 11		+ 18	+ 4
143	1074	12.7	16 47	47.2	− 16	− 9	− 10	− 14	+ 7	+ 7	− 11	+ 2
144	56°.601 †	10.2	16 52	46.9	+ 41	+ 5	− 14	+ 17	+ 2	+ 8	+ 4	+ 9
145	1086	13.2	16 55	46.4	+ 25	− 16	+ 12	− 8	+ 4	− 5	+ 8	− 3
146	1078	11.6	16 52	45.6	− 2	+ 10	− 13	+ 6	− 6	− 1	− 4	0
147	1081	10.7	16 52	45.0	+ 31	− 4	− 5	− 7	+ 8	− 14	− 4	7
148	1065	11.9	16 39	43.8	+ 10	+ 8	− 3	+ 13	+ 7	+ 3	+ 3	+ 6
149	1096	11.9	17 5	40.5	− 4	+ 22	+ 12	+ 5	− 18	− 3	+ 10	− 5
150	56°.604 †	10.1	17 8	38.1	+ 26	− 6	− 8	+ 11	− 18	− 4	+ 1	− 4
151	1069	12.9	16 42	37.7	+ 18	− 10	+ 1	+ 15	+ 13	− 6	+ 2	+ 4
152	1093	11.1	17 0	35.8	+ 10	− 1	− 10	+ 8	+ 14	− 9	− 3	+ 1
154	1075	12.9	16 49	35.2	+ 6‡	+ 10	− 37	+ 13	+ 4‡	− 4	+ 14	+ 2
155	1096a	11.8	17 5	33.1	+ 9	+ 11‡	− 20	+ 13	+ 18	+ 4	− 5	+ 10
156	1085	12.1	16 54	32.9	+ 15	− 17	+ 3	+ 10	+ 13	+ 6	+ 1	+ 9
157	1064	12.2	16 38	32.2	+ 19	− 14	− 25	+ 9	+ 5	− 10	− 11	− 1
158	1620	13.7	17 8	28.4	− 20	+ 40	− 58‡	− 5‡	− 14‡	− 0	− 24	− 5
159	1099	12.3	17 7	28.3	− 19	+ 17	− 21	+ 11	+ 12	− 7	− 1	+ 2
160	1067	11.7	16 40	28.6	+ 5	+ 3	− 7	+ 7	+ 4	+ 10	− 1	+ 8
161	1089	12.4	16 57	26.2	− 4	− 11	− 9	− 1	+ 13	+ 11	+ 8	+ 8
164	1101	11.8	17 8	24.3	+ 8	− 9	− 17	+ 3	+ 3	+ 15	− 9	+ 9
165	1102	11.4	17 8	22.1	− 13	− 25	− 24	+ 13	+ 25	+ 11	− 21	+ 15
166	1090a	10.8	16 58	22.1	+ 8	− 15	− 18	− 11	+ 11	− 6	− 11	+ 3
167	1071	11.1	16 44	19.7	+ 20	+ 5	− 13	− 4	− 4	+ 5	0	0
168	1590	12.1	16 36	18.5	+ 20	− 21	− 5	+ 8	+ 2	+ 14	− 3	+ 9
169	1082	11.3	16 52	17.4	+ 4	− 19	− 11	+ 17	+ 6	+ 5	− 9	+ 8
171	1087	12.1	16 56	17.2	− 34	− 20	− 12	+ 18	+ 2	− 0	− 19	+ 5
172	1071a	12.4	16 46	14.1	− 11	+ 7	+ 10	+ 9	+ 20	+ 18	+ 4	+ 16
173	1060	11.2	16 36	12.6	+ 3	− 15	− 26	− 12	+ 11	+ 3	− 16	− 1
174	1068	11.8	16 40	11.3	− 3	− 6	− 0	+ 35	+ 10	+ 7	− 2	+ 15
175	55°.607 †	9.5	17 9	8.4	+ 2	− 31	− 30	+ 14	+ 34	+ 22	− 22	+ 23
176	1098	10.3	17 7	6.7	+ 9	− 18	− 7	− 14	− 8	− 2	− 6	− 6
177	1615	11.4	17 4	2.7	− 5	+ 5	+ 6‡	+ 25	+ 22	− 18‡	+ 3	+ 3
178	1611	12.7	16 58	2.6		− 5‡	− 20‡		+ 1	+ 10‡	− 15	+ 7
179	1600	11.7	16 51	1.1	− 13	− 34	− 17	+ 37	− 10	− 11‡	− 20	+ 1

α = 2ʰ 15ᵐ 59ˢ to α = 2ʰ 16ᵐ 35ˢ.

No.	B. D. or Br.—St.	Mag.	1900.0 α	1900.0 δ	α μ₁	α μ₂	α μ₃	δ μ₁	δ μ₂	δ μ₃	μ''_α	μ''_δ
181	1013	11.9	2ʰ 16ᵐ 13ˢ	57° 24'.9	− 18‡	− 9	+ 27‡	− 17	+ 11	+ 36‡	+ 7	+ 16
182	1018a	11.3	16 15	22.5	− 10	+ 16	+ 8	− 11	+ 8	+ 25‡	+ 5	+ 12
183	1014	10.8	16 13	20.8	− 18	+ 27	+ 27	− 1	+ 21	+ 33	+ 2	+ 21
184		12.1	16 1	20.4	− 10	− 1	+ 33	+ 3	+ 12	+ 56‡	+ 14	+ 32
186	1571	11.7	16 11	10.1	+ 20	+ 10	+ 16	− 23	+ 6	− 3	+ 15	− 6
187	1566	12.0	16 7	8.6	+ 16	+ 1	+ 8	− 26‡	+ 4	+ 1	+ 8	− 5
188	1012	10.1	16 13	4.1	+ 6	− 3	+ 10	− 7	− 7	− 28	+ 6	− 17
189	56°.594 †	9.2	16 6	0.9	+ 17	+ 3	− 9	− 8	+ 14	− 22	0	− 9
190	1572	12.8	16 12	0.3	+ 24	+ 14	− 1	− 17	+ 9	− 9	+ 9	− 7
191	1579	12.3	16 14	56° 59'.6	+ 10	+ 39	+ 15	+ 1	− 9	− 0	+ 20	− 2
192	1050	11.7	16 30	59'.4	− 12	+ 0	+ 21	+ 13	+ 1	− 2	+ 8	+ 2
193	1547	12.2	15 59	58.9	− 6	− 17	+ 5	+ 20	+ 3	− 8	− 3	− 8
194	1562	12.3	16 6	58.3	+ 8	− 6	− 19	+ 8	− 22‡	− 7	− 9	− 7
195	1034	11.5	16 21	57.1	+ 28	+ 13	+ 6	+ 11	− 10	− 13	+ 13	− 6

Reduction to absolute P.M. : $\Delta \mu''_\alpha = - 0''.006$; $\Delta \mu''_\delta = + 0''.007$.

No.	diameter	α			δ			α			δ			x	γ
		M_1	M_2	M_3	M_1	M_2	M_3	m_1	m_2	m_3	m_1	m_2	m_3		
196	0r.539	+ 0r.043	+ 0r.041	+ 0r.068	− 0r.026	− 0r.003	+ 0r.070	+ 0″.006	+ 0″.018	+ 0″.010	− 0″.020	+ 0″.003	− 0″.008	− 34p.7	− 17p.7
197	0.893	+ 38	+ 9	+ 69	+ 45	+ 20	+ 74	+ 5	+ 1	+ 10	+ 15	+ 15	− 6	− 36.1	− 17.6
198	0.538	+ 67	+ 10	+ 97	+ 78	− 73	+ 82	+ 19	+ 2	+ 20	+ 31	− 32	− 2	− 36.1	− 17.3
199	0.839	+ 78	− 12	+ 54	+ 12	− 23	+ 57	+ 24	− 8	+ 5	− 1	− 7	− 11	− 35.5	− 16.9
200	0.562	+ 29	− 16	+ 68	− 17	− 61	+ 48	0	− 10	+ 9	− 15	− 26	− 13	− 35.5	− 16.1
201	0.608	+ 50	+ 54	+ 68	− 4	− 4	+ 73	+ 11	+ 23	+ 9	− 8	+ 1	− 3	− 35.5	− 15.6
202	0.740	+ 56	+ 111	+ 65	+ 64	− 30	+ 70	+ 15	+ 51	+ 7	+ 25	− 13	− 1	− 37.0	− 14.3
203	0.600	− 10	+ 22	+ 63	+ 1	− 28	+ 36	− 18	+ 8	+ 7	− 5	− 12	− 13	− 36.5	− 13.8
204	0.844	+ 51	+ 21	+ 49	+ 19	− 20	+ 61	+ 11	+ 8	+ 3	− 14	− 10	− 2	− 35.2	− 12.4
205	0.731	+ 36	− 12	+ 38	+ 40	− 10	+ 54	+ 6	− 9	+ 2	+ 15	− 4	− 3	− 37.1	− 12.3
207	0.568	+ 61	+ 18	+ 53	− 23	+ 22	+ 78	+ 15	+ 7	+ 4	− 12	+ 7	+ 8	− 32.8	− 9.6
208	0.619	+ 18	+ 47	+ 51	+ 6	− 5	+ 53	− 4	+ 20	+ 3	+ 1	− 5	+ 1	− 34.8	− 9.1
209	0.479		+ 65	+ 33		+ 36	+ 7		+ 29	− 3		+ 14	+ 15	− 34.4	− 8.8
210	0.778	+ 26	+ 37	+ 38	− 4	− 5	+ 22	0	+ 15	− 2	0	− 6	− 10	− 34.5	− 9.0
211	0.715	+ 79	− 1	+ 33	− 5	+ 32	+ 11	+ 28	− 4	+ 3	− 5	+ 13	− 13	− 37.4	− 8.6
212	0.564	+ 17	+ 56	+ 63	− 57	+ 1	+ 40	− 2	+ 24	+ 6	− 30	− 2	− 3	− 37.2	− 8.4
213	0.619	+ 104	+ 30	+ 70	+ 73	+ 66	+ 20	+ 37	+ 12	+ 10	+ 36	+ 27	− 10	− 33.3	− 7.8
214	0.623	− 18	− 8	+ 17	+ 9	+ 50	+ 58	− 21	− 7	+ 9	+ 4	+ 19	+ 6	− 35.1	− 6.4
215	1.000	+ 43	+ 15	+ 29	+ 42	+ 15	+ 58	+ 11	+ 4	+ 6	+ 20	+ 11	+ 6	− 36.7	− 6.4
216	0.806	+ 42	+ 29	+ 56	− 6	+ 44	+ 40	+ 8	+ 11	+ 4	− 2	+ 16	0	− 34.5	− 6.2
217	0.864	+ 25	+ 7	+ 23	+ 13	+ 35	+ 69	0	0	− 7	+ 7	+ 11	+ 10	− 35.3	− 6.0
218	0.928	+ 23	+ 44	− 28	+ 12	+ 38	+ 52	− 1	+ 19	− 25	+ 3	+ 11	− 5	− 33.5	− 5.2
219	0.604	+ 29	+ 25	− 1	+ 7	+ 28	+ 55	− 1	− 15	− 15	0	+ 5	+ 8	− 32.8	− 3.9
220	1.090	+ 6	+ 29	+ 17	+ 23	+ 3	+ 66	− 10	+ 11	+ 9	+ 15	− 7	+ 12	− 33.6	− 3.7
221	0.596	− 10	+ 21	+ 9	− 45	+ 22	+ 10	− 18	+ 7	+ 12	− 19	+ 2	− 7	− 33.4	− 3.6
222	0.616	+ 43	+ 37	+ 35	− 15	+ 15	+ 52	+ 8	+ 16	− 3	− 3	+ 2	+ 8	− 32.6	− 3.3
223	0.584	+ 27	+ 24	+ 39	− 119	+ 15	+ 20	+ 2	+ 9	− 2	− 53	− 2	− 2	− 33.9	− 2.3
225	0.563	+ 34	+ 9	+ 81	+ 15	+ 55	+ 51	+ 6	+ 1	+ 13	+ 12	+ 18	+ 9	− 35.6	− 1.7
226	0.604	+ 61	+ 54	+ 29	− 50	+ 33	+ 15	+ 20	+ 22	− 6	+ 20	+ 7	− 3	− 36.0	− 1.5
227	0.789	+ 47	+ 32	+ 33	+ 5	+ 51	+ 60	+ 12	+ 13	− 4	+ 8	+ 15	+ 13	− 34.3	− 1.4
228	0.888	+ 27	+ 1	+ 58	− 4	+ 58	+ 37	+ 1	− 2	+ 5	+ 4	+ 18	+ 5	− 32.7	− 0.9
229	0.712	+ 24	+ 31	+ 45	− 5	+ 36	+ 25	0	+ 12	0	+ 5	+ 6	+ 1	− 32.9	− 0.2
231	0.590	+ 51	+ 53	+ 11	+ 57	+ 61	− 23	+ 14	+ 23	− 12	+ 37	+ 17	− 13	− 33.2	+ 1.9
232	0.935	+ 29	− 9	+ 39	− 17	− 21	+ 7	+ 6	− 8	− 3	− 1	− 21	− 3	− 36.7	+ 2.1
233	0.516	+ 20	+ 35	+ 14	− 7	+ 34	+ 11	0	+ 13	− 11	+ 6	+ 3	0	− 34.7	+ 2.9
234	0.803	+ 60	+ 27	+ 105	+ 18	+ 64	− 4	+ 20	+ 9	+ 21	+ 18	+ 18	− 6	− 35.4	+ 3.1
235	0.632	+ 25	− 6	+ 1	+ 53	+ 15	+ 19	+ 5	− 7	+ 16	+ 36	− 6	+ 4	− 36.4	+ 4.0
236	0.650	+ 19	+ 13	− 29	− 6	+ 44	+ 16	+ 1	+ 2	− 27	+ 7	+ 8	+ 3	− 35.9	+ 4.2
237	0.574	+ 29	+ 14	+ 13	+ 65	+ 8	+ 40	+ 4	+ 3	− 12	+ 45	− 12	+ 11	− 33.1	+ 5.6
238	0.734	+ 13	+ 16	+ 55	+ 19	+ 34	− 12	− 1	+ 3	+ 3	+ 23	0	− 5	− 34.8	+ 6.8
240	0.481	− 42	+ 11	+ 31	+ 13	+ 10	+ 56	− 27	+ 1	− 28	+ 22	− 13	+ 20	− 35.6	+ 9.1
241	0.589	0	+ 78	+ 82	− 72	+ 58	+ 77	− 6	+ 34	+ 12	− 18	+ 10	+ 27	− 35.2	+ 9.5
242	0.674	+ 6	+ 1	+ 35	− 17	+ 46	− 52	− 3	− 4	+ 5	+ 11	+ 3	+ 19	− 35.0	+ 10.7
243	0.600	+ 3	+ 47	+ 64	− 57	+ 52	+ 27	− 5	+ 19	+ 6	− 8	+ 5	+ 11	− 33.6	+ 11.4
244	0.599	+ 47	+ 30	+ 115	+ 45	+ 33	+ 46	+ 17	+ 10	+ 23	− 1	− 4	+ 17	− 34.1	+ 12.2
245	1.095	+ 126	+ 106	+ 195	− 53	− 26	− 63	+ 59	+ 47	+ 50	− 4	− 33	− 20	− 37.6	+ 13.9
246	0.832	+ 58	+ 19	+ 62	− 43	+ 62	− 4	+ 24	+ 4	+ 4	− 4	+ 8	+ 4	− 34.5	+ 14.8
247	1.336	+ 37	+ 56	+ 112	− 66	+ 27	+ 11	+ 15	+ 22	+ 21	− 7	− 9	+ 6	− 35.8	+ 15.6
248	0.745	+ 18	− 22	+ 41	− 82	+ 77	+ 35	+ 9	− 16	− 4	0	+ 8	+ 15	− 35.2	+ 24.6
249	0.530	− 30	− 14	+ 54	− 9	+ 76	+ 7	− 15	− 13	0	+ 37	+ 7	+ 5	− 34.0	+ 24.8
250	0.585	+ 32	− 14	+ 55	− 22	+ 51	+ 58	+ 17	− 13	+ 1	+ 34	− 7	+ 22	− 33.1	+ 27.2
251	0.566	− 52	+ 1	+ 32	− 24	+ 68	+ 17	− 20	− 6	+ 9	+ 35	+ 1	+ 8	− 37.9	+ 28.8
252	1.100	− 2	− 7	+ 68	− 141	+ 36	+ 51	+ 6	− 10	+ 3	− 15	− 17	+ 18	− 37.9	+ 32.4
253	0.464	− 21	+ 26	+ 105	− 9	+ 101	− 6	− 4	+ 6	+ 16	+ 61	+ 14	− 3	− 36.1	+ 33.6
254	0.897	− 12	− 6	+ 96	− 146	+ 74	− 42	0	− 10	− 14	− 8	− 3	− 18	− 33.3	+ 36.6
255	0.491	+ 19	+ 40	+ 64	− 77	+ 34	− 89	0	+ 12	+ 1	+ 26	− 21	− 34	− 36.4	+ 36.9
256	0.522	+ 1	+ 77	+ 41	+ 1	+ 103	− 91	+ 8	+ 30	− 6	+ 66	+ 11	− 36	− 34.2	+ 38.0
257	0.702	− 102	+ 59	+ 128	− 41	+ 68	− 49	− 36	+ 20	+ 23	+ 63	− 11	− 30	− 35.4	+ 45.8
258	0.730	− 142	− 4	+ 82	− 156	+ 60	− 70	− 56	− 11	+ 7	+ 9	− 16	− 38	− 34.5	+ 46.8
		$α = 2^h\ 15^m\ 23^s$ to		$α = 2^h\ 15^m\ 57^s.$												
259	0.756	+ 31	− 13	+ 72	+ 22	− 84	+ 201	− 7	+ 5	+ 14	− 1	− 20	− 12	− 30.6	− 39.3

No.	B. D. or Br.—St.	Mag.	α (1900.0)	δ (1900.0)	α μ1	α μ2	α μ3	δ μ1	δ μ2	δ μ3	μ''α	μ''δ
196	1022	13.1	2h 16m 17s	56° 56".8	+ 0'.011	+ 0".015	+ 0".005	− 0".019	+ 0".008‡	− 0".009	+ 0".009	− 0".007
197	1044a	10.5	16 26	56.7	+ 10	− 2	+ 4	+ 16	+ 20	− 7	+ 4	+ 5
198	1045	13.1	16 27	56.6	+ 24	− 1	+ 14	+ 32	− 27	− 3	+ 13	0
199	1038	10.8	16 22	56.1	+ 29	− 11	0	− 0	− 2	− 12	+ 4	− 6
200	1035	12.8	16 22	55.4	+ 5	− 13	+ 4	− 14	− 21	− 14	0	− 16
201	1036	12.5	16 22	54.8	16	+ 20	+ 4	− 7	+ 6	− 4	+ 11	− 2
202	1053	11.5	16 33	53.6	+ 20	+ 48	+ 1	+ 27	− 8	− 2	+ 17	+ 4
203	1046	12.5	16 29	53.0	− 13	+ 5	+ 1	− 3	− 7	− 14	− 1	− 9
204	1029	10.8	16 19	51.7	+ 16	+ 5	− 2	− 13	− 5	− 3	+ 4	− 6
205	1052	11.5	16 33	51.6	+ 11	− 12	− 8	+ 17	+ 1	− 4	− 4	+ 2
207	1004	12.8	16 1	48.9	+ 20	+ 4	− 1	− 12	+ 11	+ 8	+ 6	+ 4
208	1021	12.4	16 16	48.4	+ 1	+ 17	− 2	+ 2	− 1	+ 1	+ 3	+ 1
209	1575	13.6	16 13	48.1		+ 26	− 8		+ 18	− 15	+ 3	− 4
210	1016	11.2	16 14	48.3	+ 5	+ 12	− 7	+ 1	− 2	− 10	+ 1	− 5
211	1059	11.6	16 35	47.8	+ 33	− 8	− 9	− 3	+ 17	− 14	+ 2	− 3
212	1056	12.8	16 33	47.7	+ 3	+ 20	0	− 28	+ 2	− 4	+ 6	− 8
213	1560	12.4	16 5	47.1	+ 42	+ 9	+ 5	+ 36	+ 31	− 10	+ 15	+ 12
214	1026	12.3	16 18	45.8	− 16	− 11	− 14	+ 5	+ 23	+ 6	− 14	+ 10
215	56°.599 †	10.0	16 29	45.7	+ 16	+ 0	− 11	+ 21	− 7	+ 5	− 1	+ 6
216	1014a	11.0	16 14	45.6	+ 13	+ 7	− 1	− 1	+ 20	0	+ 4	+ 5
217	56°.597 †	10.7	16 19	45.3	+ 5‡	− 4	− 12	+ 8	+ 15	+ 10	− 6	+ 11
218	56°.595 †	10.4	16 6	44.6	+ 4	+ 15	− 30	− 3	+ 15	− 5	− 10	+ 5
219	1003	12.5	16 1	43.2	+ 6	− 19	− 19	+ 0	+ 9	+ 8	− 13	+ 6
220	56°.596 †	9.6	16 7	42.9	− 5	+ 7	− 14	+ 15	− 3	+ 12	− 6	+ 9
221	1006	12.6	16 5	42.9	− 13	+ 3	− 17	− 19	+ 6	− 7	− 11	− 7
222	999b	12.4	15 59	42.7	+ 13	+ 12	− 7	− 3	+ 2	+ 8	+ 3	+ 4
223	1569	12.7	16 9	41.7	+ 7‡	+ 5	− 6	− 53‡	− 2	− 2	0	− 14
225	1033	12.8	16 21	41.0	+ 11	− 3	+ 9	+ 13	+ 22	+ 9	+ 6	+ 13
226	1040	12.5	16 24	40.8	+ 25	+ 18	− 10	+ 19	+ 11	− 3	+ 6	+ 3
227	1011	11.1	16 12	40.8	+ 17	+ 9	− 8	+ 8	+ 19	+ 13	+ 2	+ 13
228	1000	10.6	16 0	40.2	+ 6	− 6	+ 1	+ 4	+ 22	+ 6	0	+ 9
229	1002	11.7	16 1	39.6	+ 5	+ 8	+ 4	+ 5	+ 10	+ 2	+ 1	+ 5
231	1005	12.6	16 3	37.5	+ 19	+ 19	+ 16	+ 37	+ 21	− 12	+ 1	+ 8
232	1047	10.3	16 28	37.2	+ 11	− 12	− 8	+ 0	− 17	− 3	− 4	− 6
233	1015	13.3	16 14	36.5	+ 5	+ 9	− 16	+ 7	+ 7	+ 1	− 4	+ 4
234	1028	11.0	16 19	36.3	+ 25	+ 5	+ 16	+ 19	+ 22	− 5	+ 15	+ 8
235	1044	12.3	16 26	35.3	+ 10	− 11	− 21	+ 37	− 2	+ 5	− 11	+ 11
236	1039a	12.1	16 23	35.2	+ 6	− 2	− 32	+ 8	+ 12	+ 4	− 15	+ 7
237	1554	12.7	16 2	33.9	+ 9	− 1	− 16	+ 45	− 9	+ 12	− 6	+ 15
238	1017	11.5	16 14	32.6	+ 4	− 1	− 2	+ 23	+ 3	− 4	0	+ 5
240	1030	13.6	16 20	30.3	− 22‡	− 3‡	− 33	+ 22	− 10‡	+ 21	− 23	+ 13
241	1023	12.6	16 17	29.9	− 1‡	+ 30	+ 7	− 18	+ 13	+ 29	+ 11	+ 13
242	1020	11.9	16 15	28.8	+ 2	− 8	− 10	+ 11	+ 6	+ 21	− 6	+ 15
243	1005a	12.5	16 5	28.0	0	+ 15	+ 2	+ 8	+ 8	+ 13	+ 5	+ 6
244	1010	12.5	16 8	27.2	+ 22	+ 6	+ 18	− 1	− 1	+ 19	+ 16	+ 9
245	56°.600	9.5	16 33	25.6	+ 64	+ 42	+ 45	− 3	− 30	− 18	+ 49	− 17
246	1010a	10.9	16 11	24.7	+ 28	+ 0	− 1	+ 4	+ 11	+ 7	+ 7	+ 7
247	56°.598 †	8.6	16 20	23.9	+ 19	+ 17	+ 16	− 7	− 6	+ 9	+ 17	+ 1
248	1019	11.4	16 15	15.0	+ 12	− 21	− 9	− 1	+ 10	+ 20	− 7	+ 12
249	1565	13.1	16 7	14.7	− 12	− 18	− 4	+ 36	+ 9	+ 10	− 9	+ 16
250	1550	12.7	16 0	12.4	+ 20	− 18	− 3	+ 32	− 5	+ 27‡	− 1	+ 20
251	1057	12.8	16 34	10.7	+ 17	− 11	− 14	+ 34	+ 3	+ 13	− 14	+ 16
252	55°.605 †	9.5	16 33	7.1	+ 9	− 15	− 2	+ 16	− 15	− 12	− 2	− 14
253	1031	13.7	16 20	6.0	− 2‡	+ 1	+ 11	+ 60	+ 16	+ 4‡	+ 5	+ 21
254	55°.602 †	10.5	16 0	3.1	+ 1	− 15	+ 10	− 10	− 2	− 10	+ 1	− 8
255		13.5	16 23	2.8	+ 1	+ 7	− 4	+ 25	− 20	− 26	0	− 12
256		13.2	16 7	1.7	+ 9	+ 25	− 11‡	+ 64	+ 12	− 28‡	+ 3	+ 5
257	1016a	11.7	16 14	55° 53'.9	− 36	+ 15	+ 18‡	+ 60	− 10	− 19‡	+ 4	+ 3
258	1568	11.5	16 8	53.0	− 57‡	− 16	+ 2‡	+ 6	− 15	− 27‡	− 17	− 16
259	1529	11.3	2h 15m 49s	57° 18'.7	− 6	− 6	+ 9	0	− 14	− 11‡	+ 1	− 9

α = 2h 15m 23s to α = 2h 15m 57s.

Reduction to absolute P.M.: Δ μ''α = − 0".006; Δ μ''δ = + 0".007.

No.	diameter	α			δ			α			δ			z	γ
		M_1	M_2	M_3	M_1	M_2	M_3	m_1	m_2	m_3	m_1	m_2	m_3		
260	0r.578	+ 0r.044	+ 0r.019	+ 0r.056	+ 0r.055		+ 0r.212	− 0".003	+ 0".011	+ 0".008	+ 0".019		+ 0".005	− 27p.8	− 34p.1
261	0.837	+ 87	− 5	+ 13	+ 49	+ 0r.014	+ 175	+ 18	− 1	+ 7	+ 16	+ 0".019	− 2	− 28.1	− 31.6
262	0.597	− 4	+ 21	+ 88	+ 19	− 17	+ 142	− 26	+ 12	+ 20	+ 1	+ 4	− 14	− 28.0	− 31.5
263	0.687	+ 47	+ 36	+ 49	+ 8	− 1	+ 122	0	+ 16	+ 6	− 3	+ 6	− 5	− 27.8	− 25.3
264	1.088	+ 47	− 9	+ 55	+ 12	− 53	+ 40	+ 2	− 4	+ 7	− 1	− 19	− 31	− 30.2	− 24.0
265	0.740	+ 45	− 2	+ 40	+ 6	− 15	+ 41	+ 2	− 1	+ 1	− 4	0	− 30	− 30.6	− 23.6
266	0.773	+ 86	+ 56	+ 62	− 16	− 30	+ 12	+ 20	+ 28	+ 10	− 14	− 10	− 39	− 28.3	− 23.1
267	0.722	+ 77	− 6	+ 29	+ 20	+ 20	+ 33	+ 15	− 2	− 1	+ 4	+ 14	− 31	− 27.6	− 23.0
268	0.834	+ 30	0	+ 18	+ 4	+ 32	+ 37	− 7	0	− 6	− 4	+ 21	− 30	− 29.3	− 23.0
269	0.742	+ 31	− 13	+ 59	+ 22	− 5	+ 41	− 4	− 7	+ 8	+ 4	+ 2	− 24	− 31.2	− 21.1
270	0.630	+ 26	+ 37	+ 32	+ 18	+ 7	+ 75	− 5	+ 17	− 2	+ 3	+ 6	− 6	− 32.0	− 17.6
271	0.918	+ 31	+ 33	+ 63	+ 42	− 6	+ 70	− 4	+ 16	+ 9	+ 16	− 2	− 7	− 30.0	− 17.2
272	0.602	+ 35	− 5	+ 32	+ 41	+ 1	+ 62	− 1	− 3	+ 2	+ 15	+ 2	− 9	− 31.4	− 16.9
273	1.718	+ 79	+ 11	+ 62	+ 20	− 10	+ 24	+ 21	+ 4	+ 8	+ 4	− 3	− 21	− 31.8	− 16.6
274	0.484	+ 75	+ 11	+ 45	+ 85	+ 50	+ 11	+ 16	+ 5	+ 3	+ 39	+ 22	− 23	− 28.1	− 14.6
275	0.834	+ 102	+ 41	+ 63	+ 49	+ 8	+ 31	+ 34	+ 18	+ 8	+ 22	0	− 10	− 32.0	− 11.0
276	0.878	+ 63	+ 3	+ 36	+ 21	+ 10	+ 35	+ 12	0	+ 1	+ 10	0	− 8	− 29.4	− 10.2
277	0.684	+ 19	+ 39	+ 37	− 26	+ 11	+ 42	− 10	+ 18	0	− 13	0	− 6	− 29.1	− 9.8
278	0.658	+ 33	+ 5	+ 33	+ 4	+ 13	+ 40	0	0	− 2	+ 1	+ 1	− 4	− 31.5	− 9.3
279	0.597	+ 59	+ 21	+ 15	+ 4	+ 40	+ 32	+ 10	+ 9	− 8	+ 3	+ 13	− 7	− 28.5	− 9.2
280	0.684	+ 42	+ 8	+ 31	+ 17	+ 30	+ 77	+ 1	+ 3	− 2	+ 9	+ 8	+ 9	− 27.6	− 9.2
281	1.428	+ 49	+ 29	+ 48	+ 65	+ 4	+ 52	+ 8	+ 12	+ 3	+ 33	− 4	+ 1	− 31.1	− 7.9
282	0.766	+ 38	+ 40	+ 26	− 25	+ 2	+ 52	0	+ 19	− 4	− 10	− 7	+ 3	− 28.0	− 7.2
283	0.687	+ 84	+ 24	+ 40	+ 54	+ 26	+ 64	+ 23	+ 10	+ 1	+ 28	+ 5	+ 7	− 29.1	− 6.9
284	0.579	+ 27	+ 28	+ 56	+ 22	+ 62	+ 62	− 2	+ 12	+ 5	+ 12	+ 23	+ 7	− 32.2	− 6.6
285	1.068	+ 24	+ 35	+ 61	+ 6	− 21	+ 21	− 3	+ 16	+ 8	+ 6	− 19	− 7	− 27.9	− 5.7
286	0.640	+ 40	+ 24	+ 20	− 20	+ 6	+ 56	+ 4	+ 10	− 8	− 7	− 5	+ 6	− 32.0	− 5.4
287	0.866	+ 42	+ 48	+ 34	+ 13	+ 13	+ 26	+ 5	+ 21	− 2	+ 10	− 2	+ 4	− 30.4	− 5.2
289	0.650	+ 26	+ 11	+ 22	+ 1	+ 23	+ 64	− 2	− 7	+ 7	+ 4	+ 3	+ 9	− 31.2	− 5.0
290	0.902	+ 53	+ 61	+ 7	− 10	+ 27	+ 42	+ 11	+ 27	− 12	− 1	+ 5	+ 2	− 31.6	− 4.9
291	0.629	+ 61	+ 35	+ 42	+ 26	+ 44	+ 42	+ 13	+ 16	+ 1	+ 17	+ 12	+ 2	− 29.1	− 4.9
292	0.759	+ 31	+ 20	+ 13	+ 25	+ 37	+ 33	− 2	+ 8	− 9	+ 17	+ 8	0	− 29.3	− 4.2
293	0.727	+ 58	− 1	+ 41	+ 14	+ 56	+ 70	+ 11	+ 2	+ 1	+ 11	+ 17	+ 13	− 29.1	− 3.9
294	0.528	+ 168	+ 158	+ 233	− 45	+ 9	+ 61	+ 68	+ 75	+ 67	− 19	− 13	− 33	− 32.3	− 3.8
295	0.719	+ 15	+ 8	+ 28	− 12	+ 10	+ 46	− 8	+ 2	− 4	− 1	− 5	+ 5	− 30.2	− 3.6
296	0.668	+ 53	+ 18	+ 34	+ 47	− 1	+ 47	+ 12	+ 6	− 3	+ 27	− 10	+ 6	− 31.8	− 3.3
298	0.959	+ 25	+ 29	+ 27	+ 28	+ 4	+ 23	+ 2	+ 12	− 5	− 7	− 13	− 1	− 30.6	− 2.3
299	0.454	+ 53	+ 53	+ 34	+ 5	+ 7	+ 49	+ 10	+ 24	− 1	+ 10	+ 9	+ 8	− 27.6	− 2.2
300	0.650	+ 35	− 2	+ 27	− 2	+ 19	+ 31	+ 3	− 3	+ 5	+ 5	+ 1	+ 2	− 30.8	− 2.0
301	0.660	+ 70	+ 55	− 13	+ 1	+ 26	+ 51	+ 18	+ 25	− 18	+ 7	0	+ 9	− 28.4	− 1.8
302	0.562.	+ 41	+ 44	+ 47	+ 4	+ 35	+ 65	+ 6	+ 19	+ 2	+ 8	+ 6	+ 14	− 31.4	− 1.5
303	0.830	+ 46	+ 57	− 7	− 15	− 16	+ 58	+ 9	+ 25	− 17	− 1	− 19	+ 12	− 32.2	− 1.4
304				− 24	+ 31		+ 76			− 22	+ 23		+ 18	− 27.9	− 1.0
305	0.648	+ 63	+ 44	+ 53	+ 12	+ 50	+ 1	+ 18	+ 19	+ 3	+ 1	+ 13	− 7	− 32.3	− 0.5
306	0.529	+ 82	+ 53	+ 44	− 6	+ 44	+ 12	+ 25	+ 24	+ 2	+ 6	+ 8	− 3	− 28.7	0.0
307	0.801	+ 25	+ 33	+ 9	+ 19	+ 25	+ 17	+ 1	+ 14	+ 11	+ 18	− 1	− 1	− 29.9	+ 0.5
308	1.030	+ 44	+ 49	+ 15	+ 8	+ 21	+ 53	+ 8	+ 21	− 9	+ 6	− 4	+ 13	− 29.9	+ 1.7
309			+ 49			+ 91			+ 21			+ 30		− 30.0	+ 1.8
310	0.998	− 23	+ 40	+ 7	− 19	− 6	+ 85	− 26	+ 18	− 12	+ 1	+ 18	+ 24	− 28.9	+ 2.0
311	0.661	+ 8	+ 25	+ 24	+ 13	+ 23	+ 4	− 11	+ 10	− 5	+ 18	− 5	− 3	− 28.2	+ 3.1
312	0.781	+ 26	+ 15	+ 47	− 25	+ 28	+ 50	− 1	+ 5	+ 2	0	− 3	+ 14	− 27.8	+ 3.7
313	0.520	+ 25	+ 4	+ 36	+ 21	+ 23	+ 26	+ 1	+ 1	+ 3	+ 22	− 4	+ 6	− 32.4	+ 3.8
314	0.826	+ 34	+ 39	+ 56	+ 33	+ 17	+ 28	+ 4	+ 16	+ 5	− 4	+ 8	+ 7	− 29.9	+ 3.8
315	0.830	+ 42	+ 6	+ 35	− 19	+ 14	+ 33	+ 7	0	− 2	+ 3	− 10	+ 8	− 28.6	+ 4.4
316	0.523	− 33	+ 14	+ 74	− 15	+ 38	− 2	− 30	+ 4	+ 12	+ 7	+ 1	− 4	− 28.0	+ 5.2
317	0.812	+ 32	+ 22	+ 30	+ 11	+ 48	+ 19	+ 2	+ 8	− 4	+ 20	+ 6	+ 3	− 29.0	+ 5.2
318	0.921	+ 39	+ 18	+ 14	− 34	+ 12	+ 2	+ 9	+ 5	− 11	− 2	− 11	− 1	− 31.8	+ 6.1
319	0.579	+ 39	− 18	+ 26	+ 33	+ 18	+ 62	+ 9	− 12	+ 7	+ 30	− 8	+ 20	− 31.9	+ 6.3
320	0.850	+ 35	+ 9	+ 69	− 48	+ 12	+ 36	+ 7	+ 1	+ 9	− 5	− 14	+ 13	− 30.6	+ 8.8
321	0.634	+ 44	− 47	+ 39	− 16	+ 64	+ 40	+ 11	− 27	− 1	+ 15	+ 8	+ 15	− 29.2	+ 12.1

No.	B. D. or Br.—St.	Mag.	1900.0 α	1900.0 δ	α μ_1	α μ_2	α μ_3	δ μ_1	δ μ_2	δ μ_3	μ''_α	μ''_δ
260	949	12.7	2h 15m 27s	57° 13.3	− 0″.001‡	+ 0″.009‡	+ 0″.004	+ 0″.017		+ 0″.006‡	+ 0″.004	+ 0″.010
261	954	10.8	15 29	10.8	+ 21	− 3	+ 11	+ 14‡	+ 0″.025	− 1	+ 1	+ 9
262		12.6	15 28	10.7	− 23‡	+ 10	+ 16	− 1‡	+ 10‡	− 13‡	+ 5	− 4
263	948	11.8	15 27	4.6	+ 3	+ 14	+ 2	− 5	+ 11	− 4	+ 5	− 0
264	56°.589 †	9.6	15 43	3.3	+ 5	− 6	+ 2	− 2	− 14	− 31	+ 1	− 19
265	981	11.5	15 47	2.9	+ 5	− 3	− 4	− 5	+ 5	− 30	− 1	− 15
266	56°.585 †	11.2	15 30	2.3	+ 23	+ 26	+ 6	− 15	− 5	− 39	+ 15	− 24
267	941	11.6	15 25	2.3	+ 18	− 4	− 5	+ 2	+ 19	− 30	+ 1	− 10
268	969	10.9	15 38	2.3	− 4	− 2	− 10	− 5	+ 26	− 30	− 6	− 10
269	986	11.4	15 51	0.3	0	− 10	+ 4	+ 3	+ 7	− 24	0	− 9
270	998	12.3	15 57	56° 56.8	− 1	+ 14	− 6	+ 3	+ 11	− 6	0	0
271	974	10.4	15 42	56.5	0	+ 13	+ 5	+ 15	+ 3	− 7	+ 6	+ 1
272	987	12.5	15 52	56.2	+ 3	− 6	+ 6	+ 14	+ 7	− 9	− 4	+ 1
273	56°.593 †	7.4	15 55	55.8	+ 25	+ 1	+ 4	+ 4	+ 2	− 21	+ 8	− 9
274	1510	13.6	15 27	53.9	+ 20	+ 2	0‡	+ 38	+ 27	− 23	+ 6	+ 5
275	995	10.9	15 56	50.3	+ 39	+ 15	+ 4	+ 22	+ 5	− 10	+ 15	+ 2
276	56°.587 †	10.6	15 37	49.6	+ 16	− 3	− 5	+ 9	+ 5	− 8	+ 1	0
277	966	11.8	15 35	49.2	− 6	+ 15	− 4	− 14	+ 5	− 6	0	− 5
278	990	12.0	15 52	48.7	+ 5	− 3	− 6	0	+ 5	− 4	− 2	− 1
279	956	12.6	15 30	48.6	+ 14	+ 6	− 11	+ 2	+ 17	− 6	0	+ 2
280	939	11.8	15 24	48.3	+ 5	0	− 5	+ 7	+ 12	+ 10	− 1	+ 10
281	56°.591 †	8.3	15 49	47.3	+ 13	+ 9	− 1	+ 32	0	+ 1	+ 5	+ 8
282	945	11.3	15 26	46.8	+ 4	+ 16	− 7	− 12	− 3	+ 4	+ 1	− 2
283	964	11.8	15 34	46.3	+ 27	+ 7	− 2	+ 27	+ 9	+ 8	+ 7	+ 13
284	997	12.7	15 57	45.9	+ 3	+ 9	+ 1‡	+ 12	+ 27	+ 7	+ 3	+ 13
285	56°.584 †	9.7	15 25	45.0	+ 1	+ 13	+ 5	+ 4	− 15	− 6	+ 6	− 6
286	994	12.2	15 55	44.8	+ 9	+ 7	− 12	− 7	− 1	+ 6	− 2	+ 1
287	977	10.7	15 43	44.6	+ 10	+ 18	− 6	+ 9	+ 2	+ 3‡	+ 4	+ 1
289	983	12.1	15 49	44.3	+ 3	− 10	− 11	+ 3	+ 7	+ 10	− 7	+ 7
290	988	10.5	15 52	44.3	+ 16	+ 24	− 16	− 2	+ 9	+ 3	+ 2	+ 3
291	965	12.3	15 34	44.3	+ 17	+ 13	− 2	+ 16	+ 16	+ 3	+ 6	+ 9
292	967	11.3	15 35	43.6	+ 2	+ 5	− 12	+ 16	+ 12	+ 1	+ 4	+ 7
293	962	11.5	15 34	43.3	+ 15	− 5	− 2	+ 10	+ 21	+ 14	+ 1	+ 15
294		13.2	15 57	43.1	+ 73	+ 72	+ 63	− 19	− 9‡	− 33	+ 68	− 23
295	975	11.6	15 42	43.0	− 3	− 1	− 8	− 2	− 1	+ 6	− 5	+ 2
296	992a	12.0	15 54	42.7	+ 17	+ 3	− 7	+ 26	− 6	+ 7	+ 1	+ 8
298	56°.590 †	10.2	15 45	41.8	+ 3	+ 9	− 9	− 8	− 9	0	− 1	− 4
299	937	13.8	15 23	41.6	+ 14	+ 21	− 4	+ 8	− 5	+ 9	+ 7	+ 5
300	980	12.1	15 46	41.4	+ 8	− 6	− 9	+ 4	+ 3	+ 3	− 4	+ 3
301	952	12.0	15 29	41.2	+ 22	+ 22	− 21	+ 5	+ 4	+ 10	0	+ 7
302	984	12.8	15 51	40.9	+ 11	+ 15	− 2	+ 7	+ 10	+ 15	+ 5	+ 12
303	995a	10.9	15 56	40.8	+ 14	+ 21	− 21	− 2	+ 15	+ 13	− 2	+ 2
304	1503		15 25	40.4			− 25	+ 21		+ 19	− 25	+ 20
305	996	12.1	15 56	39.9	+ 23	+ 15	− 1	0	+ 17	− 6	+ 9	+ 1
306	957	13.1	15 31	39.4	+ 29	+ 21	− 1	+ 4	+ 12	− 2	+ 12	+ 3
307	970	11.1	15 39	38.9	+ 3	+ 11	− 14	+ 17	+ 3	0	+ 3	+ 5
308	56°.588 †	9.8	15 39	37.8	+ 12	+ 17	− 12	+ 5‡	0	+ 14	+ 1	+ 8
309			15 40	37.7		+ 17‡			+ 34‡		+ 17	+ 34
310	56°.586 †	10.0	15 32	37.5	− 22	+ 15	− 15	− 1	− 14	+ 26	− 9	+ 9
311	947	12.0	15 27	36.4	− 7	+ 7	− 8	+ 16	− 1	− 1	− 4	+ 3
312	938	11.2	15 24	35.8	+ 3	+ 2	− 1	− 2	+ 1	+ 16	+ 1	+ 8
313	999	13.2	15 57	35.7	+ 6	− 5	− 7	+ 21	0	+ 7	+ 3	+ 9
314	971	10.9	15 39	35.7	+ 8	+ 12	+ 2	− 5	− 4	+ 9	+ 6	+ 2
315	954a	10.9	15 29	35.1	+ 11	− 4	− 5	+ 1	− 6	+ 10	+ 1	+ 4
316	943	13.2	15 25	34.3	− 26	0	+ 9	+ 5	+ 5	− 2	− 2	+ 1
317	958	11.0	15 32	34.3	+ 6	+ 4	− 7	+ 18	+ 10	+ 5	− 1	+ 9
318	56°.592 †	10.4	15 53	33.4	+ 13	+ 1	− 15	− 3	− 8	+ 1	− 4	− 2
319	992	12.7	15 53	33.1	+ 13	− 16	− 11	+ 29	− 5	+ 22	− 6	+ 17
320	976	10.8	15 43	30.6	+ 11	− 3	+ 6	− 7	+ 11	+ 15	+ 5	+ 3
321	960	12.2	15 33	27.4	+ 15	− 31	− 4	+ 13	+ 11	+ 18	− 6	+ 15

Reduction to absolute P.M. : $\Delta \mu''_\alpha = − 0″.006$; $\Delta \mu''_\delta = + 0″.007$.

No.	diameter	α			δ			α			δ			x	γ
		M₁	M₂	M₃	M₁	M₂	M₃	m₁	m₂	m₃	m₁	m₂	m₃		
322	0ʳ.553	− 0ʳ.004	+ 0ʳ.008	+ 0ʳ.072	− 0ʳ.029	+ 0ʳ.048	+ 0ʳ.050	− 0″.009	0″.000	+ 0″.009	+ 0″.015	− 0.003	+ 0″.020	− 29ᵖ.4	+ 17ᵖ.1
323	0.872	+ 34	+ 26	+ 53	− 86	+ 41	+ 50	+ 12	+ 8	+ 1	− 9	− 7	+ 20	− 31.7	+ 19.8
324	0.497	+ 26	− 14	+ 62	− 81	+ 91	− 18	+ 8	− 12	+ 6	0	+ 14	− 4	− 28.0	+ 23.3
325	0.770	− 21	+ 30	+ 88	− 119	+ 66	+ 16	− 14	+ 9	+ 15	− 16	0	+ 8	− 28.3	+ 25.2
327	1.074	− 39	− 5	+ 55	− 162	+ 38	− 19	− 18	− 9	+ 1	− 29	− 16	− 6	− 32.1	+ 29.6
328	0.522	0	+ 25	+ 75	− 111	+ 37	− 7	0	+ 5	+ 9	0	− 19	− 3	− 28.8	+ 32.0
329	0.544	− 119	+ 45	− 26	− 80	+ 125	− 45	− 47	+ 13	− 29	+ 43	+ 16	− 27	− 31.0	+ 44.8
330	1.032	− 73	+ 19	+ 74	− 206	+ 52	− 67	− 23	0	+ 5	− 16	− 20	− 36	− 32.9	+ 46.0
331	0.700	− 144	− 11	+ 42	− 165	+ 87	− 91	− 57	− 16	− 5	+ 11	− 6	− 49	− 29.9	+ 49.0
	α = 2ʰ 14ᵐ 45ˢ to ϰ = 2ʰ 15ᵐ 22ˢ.														
332	0.635	+ 13	− 7	+ 2	+ 31	− 123	− 257	− 26	+ 4	− 7	+ 17	− 30	− 49	− 21.8	− 55.8
333	0.556	− 58	− 27	+ 13	− 36	− 100	+ 323	− 56	− 9	− 5	− 20	− 19	− 10	− 26.7	− 51.6
334	0.666	− 50	− 44	− 3	− 11	− 53	+ 350	− 55	− 16	− 9	− 8	− 0	+ 5	− 23.6	− 49.8
335	0.661	+ 4	− 30	+ 77	+ 6	− 76	+ 426	− 28	− 10	+ 18	− 1	− 13	+ 39	− 24.6	− 47.5
336	0.714	+ 44	− 35	+ 54	+ 24	− 43	+ 289	− 9	− 12	+ 10	+ 7	− 2	+ 9	− 23.4	− 41.7
337	0.738	+ 34	+ 14	+ 71	+ 54	− 2	+ 240	− 11	+ 10	+ 15	+ 19	+ 15	+ 6	− 25.6	− 37.2
338	0.815	+ 30	+ 12	+ 57	+ 79	− 41	+ 235	− 12	+ 9	+ 9	+ 31	− 3	− 5	− 26.7	− 36.9
339	0.570	+ 45	− 20	− 11	− 5	− 19	+ 205	− 3	− 8	− 15	− 10	+ 2	+ 8	− 26.8	− 32.2
340	0.709	+ 16	+ 20	+ 33	+ 23	+ 7	+ 166	− 18	+ 12	− 1	+ 3	+ 15	− 6	− 26.9	− 31.6
341	0.968	+ 14	− 15	− 3	+ 18	− 19	+ 177	− 20	− 5	− 11	+ 2	+ 1	− 1	− 25.9	− 30.5
342	0.900	+ 89	+ 97	− 134	+ 22	− 58	+ 114	+ 16	+ 50	+ 37	+ 4	− 19	− 20	− 24.2	− 30.3
343	0.627	− 19	+ 15	+ 51	− 29	− 35	+ 149	− 35	+ 9	+ 7	− 21	− 7	− 7	− 26.9	− 30.1
344	0.589	+ 55	− 16	+ 127	+ 16	− 34	+ 6	+ 1	− 6	+ 35	+ 5	− 18	− 31	− 23.4	− 17.8
345	0.691	− 9	+ 11	+ 80	+ 58	− 6	+ 32	− 29	+ 7	+ 17	+ 25	− 4	− 21	− 24.9	− 17.4
346	0.690	+ 2	+ 37	+ 53	+ 52	+ 10	+ 43	− 24	+ 19	+ 9	+ 23	+ 2	− 16	− 23.2	− 16.7
347	1.199	− 6	+ 6	+ 46	− 11	− 40	+ 29	− 29	+ 5	+ 7	− 7	− 23	− 20	− 22.3	− 16.2
348	0.454	+ 43	+ 50	+ 43	+ 37	+ 6	+ 40	− 3	+ 25	+ 5	− 17	− 1	− 12	− 23.9	− 14.4
349	0.800	+ 5	+ 23	+ 21	+ 15	+ 31	+ 60	− 22	+ 12	− 2	− 7	+ 9	− 4	− 23.3	− 13.4
350	0.639	+ 28	+ 12	+ 31	+ 59	+ 1	+ 76	− 8	+ 6	− 1	+ 28	− 4	+ 2	− 25.6	− 12.5
351	1.052	+ 20	+ 24	+ 45	+ 8	− 7	+ 78	− 11	+ 11	+ 3	+ 4	− 10	+ 7	− 26.8	− 10.2
352	0.534	+ 50	+ 27	+ 15	− 16	+ 41	+ 83	+ 3	+ 13	− 6	− 7	+ 13	+ 9	− 25.9	− 10.1
353	1.320	− 8	+ 8	+ 36	− 9	+ 6	+ 63	− 25	+ 4	+ 1	− 3	− 4	− 3	− 26.1	− 9.4
354	0.662	+ 29	+ 19	− 8	+ 3	+ 40	+ 61	− 9	+ 10	− 13	+ 4	+ 10	− 3	− 22.5	− 8.9
355	0.624	+ 46	− 30	− 52	− 15	+ 34	+ 97	0	− 15	+ 7	− 4	+ 7	+ 16	− 23.8	− 8.3
357	0.555	+ 19	+ 60	+ 64	+ 1	+ 61	+ 46	− 13	+ 29	+ 12	+ 4	+ 19	− 1	− 22.6	− 8.1
358	1.912	+ 23	0	+ 77	− 3	+ 21	+ 19	− 11	0	+ 17	+ 2	0	− 10	− 23.1	− 7.7
359	0.491	+ 28	− 2	+ 38	− 7	+ 9	+ 80	− 7	− 1	+ 1	0	− 5	+ 12	− 24.7	− 7.1
362	0.694	+ 65	+ 16	+ 40	+ 44	+ 38	+ 61	+ 12	+ 7	+ 2	+ 25	+ 9	+ 6	− 25.9	− 6.6
363	0.618	+ 20	+ 29	− 3	+ 2	+ 18	+ 14	− 12	+ 14	− 12	+ 4	+ 2	− 9	− 23.4	− 5.9
364	0.631	+ 74	+ 21	+ 12	+ 37	+ 36	+ 15	+ 17	+ 9	− 8	+ 23	+ 7	− 8	− 25.5	− 5.6
365	0.488	+ 78	+ 78	+ 39	− 27	+ 42	+ 46	+ 20	+ 37	+ 1	− 9	+ 10	+ 2	− 26.8	− 5.4
366				− 7			+ 29			− 15			− 3	− 26.8	− 5.3
367	0.703	+ 40	+ 16	+ 40	+ 5	+ 42	+ 28	− 1	+ 7	+ 3	+ 9	+ 8	− 3	− 23.4	− 5.3
368	0.617	+ 86	+ 32	+ 30	0	+ 27	+ 16	+ 22	+ 15	− 1	+ 6	+ 1	− 8	− 24.8	− 5.2
369	0.699	+ 31	+ 23	− 7	+ 18	+ 37	+ 30	− 3	+ 10	− 15	+ 14	+ 7	− 3	− 26.4	− 4.9
370	0.468	+ 82	+ 28	+ 17	+ 32	+ 52	+ 20	+ 21	+ 13	− 6	+ 21	+ 14	− 6	− 25.7	− 4.8
371	0.756	+ 34	+ 15	+ 17	+ 15	+ 22	+ 78	+ 2	+ 6	− 6	+ 12	0	+ 14	− 26.5	− 4.7
372	0.554	+ 74	0	+ 23	− 1	+ 69	+ 28	+ 16	− 1	− 4	+ 5	+ 21	− 2	− 24.8	− 4.3
373	0.852	+ 4	+ 14	+ 29	+ 9	− 6	− 4	+ 17	+ 6	− 2	+ 9	− 14	− 13	− 26.7	− 4.0
374	0.872	+ 67	+ 21	+ 35	+ 2	+ 25	+ 28	+ 13	+ 10	+ 1	+ 7	0	− 2	− 24.5	− 3.7
376	0.541	+ 58	+ 6	+ 28	− 7	+ 40	+ 40	+ 8	+ 2	− 1	+ 3	+ 6	+ 3	− 23.5	− 3.4
377	0.523	+ 56	+ 7	+ 16	+ 16	+ 28	+ 74	+ 8	+ 2	− 18	− 1	+ 1	+ 15	− 24.7	− 3.2
378	0.528	+ 48	+ 21	+ 77	+ 4	+ 30	+ 83	+ 4	+ 9	+ 15	+ 9	+ 2	+ 18	− 25.0	− 3.1
379	0.474	+ 46	− 23	+ 62	+ 50	+ 76	+ 33	+ 3	− 12	+ 9	+ 31	+ 24	+ 1	− 25.2	− 2.9
380	0.951	+ 8	− 10	+ 42	+ 18	+ 23	+ 42	− 17	− 6	+ 5	− 1	− 3	+ 4	− 22.9	− 3.0
380*			+ 59	+ 43		+ 41	+ 8		+ 27	+ 3	+ 7		− 8	− 25.9	− 2.8
381	0.673	+ 46	+ 22	+ 22	− 39	+ 26	+ 47	+ 4	+ 9	− 4	− 13	0	− 6	− 25.9	− 2.8
382	0.774	+ 14	+ 36	+ 34	− 73	+ 49	+ 26	− 13	+ 17	+ 1	− 28	+ 11	− 1	− 24.0	− 2.7
383	0.636	+ 20	+ 36	− 1	+ 5	− 7	+ 32	− 10	+ 17	− 11	+ 10	− 17	+ 1	− 23.6	− 2.4
384	0.808	− 23	+ 3	+ 57	+ 41	− 4	+ 37	− 31	0	+ 9	+ 28	− 16	+ 3	− 24.2	− 2.3
385	0.749	+ 34	+ 34	+ 26	− 17	− 12	+ 9	− 3	+ 16	− 3	0	− 20	− 6	− 24.4	− 2.2

No.	B. D. or Br.—St.	Mag.	1900.0 α	δ	α μ₁	μ₂	μ₃	δ μ₁	μ₂	μ₃	μ″α	μ″δ
322	961	12.9	2h 15m 34s	56°.22'.5	− 0".005	− 0".004	+ 0".006	+ 0".013	0".000	+ 0".024	+ 0".001	+ 0".015
323	985	10.6	15 51	19.8	+ 15	+ 4	− 3	− 11	− 4	+ 24	+ 3	+ 8
324	940	13.4	15 24	16.3	+ 11	− 16	− 3	− 3	+ 16	+ 1	− 0	+ 4
325	944	11.2	15 26	14.4	− 11	+ 5	+ 12	− 19	+ 2	+ 13	+ 5	+ 2
327	55°.600 †	9.6	15 52	10.0	− 16	− 13	− 3	− 31	− 14	0	− 9	− 11
328	953	13.2	15 28	7.7	+ 2‡	+ 1	+ 6	− 4	− 17	+ 4	+ 4	− 3
329	1526	13.0	15 43	55° 55'.0	− 47‡	+ 9‡	− 33‡	+ 39	+ 17‡	− 16‡	26	+ 6
330	55°.601	9.8	15 56	53.8	− 24	− 5	+ 1‡	− 20‡	− 19	− 25‡	7	22
331		11.7	15 35	50.8	− 59‡	− 20	− 9‡	+ 6‡	− 5	− 37‡	24	18
	α = 2h 14m 45s to α = 2h 15m 22s.											
332		12.2	2h 14m 45s	57° 34'.9	− 29	+ 4	− 11‡	+ 12‡	− 23‡	− 44‡	12	25
333	1499	12.9	15 22	30.7	− 58	− 10‡	− 10	− 23	− 13	− 7‡	22	12
334	863	12.0	14 57	28.9	− 56	− 17	− 13	− 12	+ 6	+ 9‡	25	+ 3
335	889	12.0	15 5	26.7	− 29	− 11	+ 14	− 5	− 7	+ 42‡	3	+ 18
336	857	11.6	14 56	20.9	− 9	− 13	+ 6	+ 3	+ 4	+ 12	2	+ 8
337	1474	11.5	15 11	16.4	− 10	+ 9	+ 11	+ 16	+ 21	+ 8	+ 5	+ 13
338	930	11.0	15 20	16.1	− 10	+ 8	+ 5	+ 28	+ 3	+ 7	+ 2	+ 11
339		12.8	15 20	11.4	− 1	− 10	− 19	− 12	− 8	− 9	− 12	+ 3
340	932	11.7	15 20	10.8	− 16	− 10	− 3	+ 1	+ 21	− 5	− 3	+ 3
341	56°.579 †	10.2	15 13	9.7	− 18	− 7	− 15	− 1	+ 7	+ 2	− 14	+ 2
342	872	10.5	15 1	9.5	+ 18	+ 48	+ 34	+ 1	− 13	− 18	+ 34	− 12
343	1494	12.3	15 20	9.3	− 33	+ 7	+ 3	− 23	− 1	− 6	− 5	− 9
344	850	12.6	14 54	56° 57'.2	+ 4	− 8	+ 32	+ 2	− 13	− 29	+ 15	− 17
345	888	11.8	15 5	56.8	− 25	+ 5	+ 14	+ 22	+ 1	− 20	+ 2	− 4
346	845a	11.8	14 53	56.0	− 20	+ 17	+ 6	+ 20	+ 7	− 14	+ 2	− 0
347	56°.565 †	9.1	14 46	55.7	− 25	+ 3	+ 4	− 10	− 18	− 18	− 3	− 16
348	1459	13.8	14 58	53.8	+ 1	+ 23‡	+ 2	+ 14	+ 4	− 11	+ 7	− 1
349	847	11.1	14 53	52.9	− 18	+ 10	− 5	− 10	+ 14	− 2	− 4	− 0
350	904	12.2	15 9	51.9	− 4	+ 3	− 4	+ 25	+ 1	+ 3	− 2	+ 8
351	56°.582 †	9.7	15 18	49.6	− 7	+ 8	− 0	− 2	− 5	+ 8	− 0	+ 3
352	1481	13.1	15 11	49.5	+ 7	+ 10	− 9	− 9	+ 18	+ 10	− 0	+ 7
353	56°.577 †	8.6	15 12	48.8	− 21	+ 1	− 2	− 5	0	− 4	− 6	+ 1
354	834	12.0	14 47	48.4	− 5	+ 7	− 16	+ 1	+ 14	+ 5	− 7	+ 6
355	1457	12.3	14 56	47.8	+ 4‡	− 18	+ 4	− 7	+ 11	+ 18	− 1	+ 10
357	1440	12.9	14 48	47.6	+ 9‡	+ 26	+ 9	+ 1	+ 23	+ 1	+ 9	+ 6
358	56°.568 †	6.9	14 51	47.1	− 7	− 3	+ 14	− 1	+ 4	− 8	+ 4	− 3
359	1467	13.5	15 2	46.5	− 3	− 4	− 2	− 3	− 1	+ 14	− 3	+ 6
362	913a	11.8	15 11	46.0	+ 16	+ 4	− 1	+ 22	− 13	+ 8	+ 4	+ 13
363	846	12.4	14 53	45.3	− 8	+ 11	− 15	+ 1	+ 2	− 7	− 7	− 3
364	901	12.3	15 8	45.0	+ 21	+ 6	− 11	+ 20	+ 11	− 6	+ 1	+ 5
365	927	13.5	15 18	44.9	+ 24	+ 34	− 2	− 11	+ 14	+ 3	+ 14	+ 2
366	926		15 18	44.8		− 18			− 2		18	− 2
367	848	11.7	14 53	44.8	+ 3	+ 4	+ 0	+ 6	+ 12	− 1	+ 2	+ 4
368	883	12.4	15 3	44.7	+ 26	+ 12	+ 4	+ 3	+ 5	+ 6	+ 7	+ 1
369	920	11.7	15 14	44.4	+ 1	+ 7	+ 18	+ 12	+ 11	− 1‡	+ 7	+ 5
370	907	13.7	15 10	44.2	+ 25	+ 10	+ 9	+ 18	+ 18	− 4	+ 4	+ 7
371	921	11.3	15 15	44.2	+ 2	+ 3	− 9	+ 10	+ 4	+ 16	− 3	+ 11
372	880	12.9	15 3	43.8	+ 20	− 4	− 7	+ 2	+ 25	0	0	+ 7
373	56°.580 †	10.8	15 17	43.4	− 13	+ 3	− 5	+ 7	− 10	− 11	− 5	− 6
374	873	10.6	15 1	43.2	+ 17	+ 7	− 2	+ 4	+ 4	+ 0	+ 5	+ 2
376		13.0	14 53	42.9	+ 12‡	− 1	− 4	+ 0	+ 10	+ 5	+ 1	+ 5
377	876	13.2	15 2	42.7	+ 12	− 1	− 21	− 4	+ 5	+ 17	− 8	+ 9
378	887	13.2	15 4	42.6	+ 8	+ 6	+ 12	+ 6	+ 6	+ 20	+ 10	+ 13
379	893	13.7	15 6	42.3	+ 7	− 15	+ 6	+ 28	+ 28	+ 3	+ 1	+ 15
380	56°.566 †	10.2	14 49	42.5	− 13	− 9	+ 3	− 4	− 1‡	+ 6	− 4	+ 2
380*			15 11	42.3		+ 24	0		+ 11‡	− 6	+ 8	0
381	913	11.9	15 11	42.2	+ 8‡	+ 6	− 7	− 16‡	+ 4	+ 8	0	+ 1
382	860	11.2	14 57	42.1	− 9	+ 14	− 2	− 31	+ 15	+ 1	0	− 3
383	851	12.2	14 54	41.9	− 6	+ 14	− 14	+ 7	− 13	+ 3	− 5	− 0
384	865	11.0	14 59	41.8	− 27	− 3	+ 6	+ 25	− 12	+ 5	− 4	+ 6
385	871	11.4	15 0	41.7	+ 1	+ 13	− 6	− 3	+ 16	− 4	0	− 7

Reduction to absolute P.M.: Δ μ″α = − 0".006; Δ μ″δ = + 0".007.

No.	diameter	α M₁	α M₂	α M₃	δ M₁	δ M₂	δ M₃	α m₁	α m₂	α m₃	δ m₁	δ m₂	δ m₃	ϰ	γ
386	0ʳ.573	+0ʳ.056	+0ʳ.038	+0ʳ.014	+0ʳ.049	+0ʳ.010	+0ʳ.010	+0″.009	+0″.018	−0″.008	+0″.032	−0″.009	−0″.006	−25ᵖ.6	−2ᵖ.1
387	0.547	+60	+3	+60	+12	+12	+58	+10	0	+10	+14	−8	+11	−24.3	−1.9
388	1.450	+12	+30	+63	+6	−3	−11	−14	+14	+11	+11	−16	−13	−24.0	−1.8
389	1.006	−11	+12	+75	+10	−4	+39	−24	+4	+15	+14	−17	+5	−24.3	−1.4
390	0.620	+19	+24	−1	0	+16	+32	−8	+10	−13	+8	−6	+2	−26.5	−1.2
391	0.560	−52	−27	+69	+20	+55	+23	−42	−16	+11	+18	+14	−1	−27.4	−1.2
392	1.132	+15	+4	+4	+53	−18	+19	−12	0	−10	+35	−23	−2	−24.0	−1.1⁵
393	0.446	+103	−29	+13	+64	+112	+24	+32	−16	−8	+40	+40	0	−25.2	−1.1⁵
394	0.701	+7	+2	+69	+2	+47	+70	−16	0	+13	+10	+8	+16	−24.3	−1.1
395	0.424	+60	+17	+58	−14	+26	+90	+10	+7	+10	+2	−2	+23	−22.9	−1.0⁵
396	0.610	+50	+14	+3	+1	+52	+57	+5	+5	−9	+9	+10	+11	−23.6	−0.9
397	0.778	+17	+14	+66	−4	+16	+50	−11	+5	+12	+7	−7	+9	−24.0	−0.6
398	1.164	+53	+2	+33	−11	+15	+50	+8	0	−1	+4	−7	+9	−25.1	−0.5
399	0.561	+218	6			+76		+88	4			+22		−25.1	−0.4
400	1.085	+1	+19	+23	+6	+10	−1	−17	+8	−4	+12	−10	−8	−26.3	−0.5
401	0.548	−16	−49	+65	−25	+23	+19	−26	−25	+11	−2	−4	−1	−24.6	−0.3
402	0.639	+26	+37	+52	−21	−42	+7	−6	+17	+6	0	−36	−5	−24.4	−0.2
403	0.428	+37	+44	+8	−10	+72	+31	0	+20	−8	+5	+19	+3	−24.2	−0.1
404	1.132	−2	+34	−24	+26	+12	+35	−19	+15	+21	+22	+9	+5	−25.3	−0.0⁵
405	0.736	−8	+3	+39	+42	+25	+42	−21	0	+1	+30	−3	+7	−25.6	+0.0⁵
406	1.261	−22	+20	+54	−34	−16	+56	−29	+8	+7	−7	−23	+12	−24.9	+0.2
407	0.541	+130	+10	+29	−6	+40	+45	+46	+3	−2	+7	+4	+8	−25.4	+0.2
408	0.898	+20	+75	+7	+4	+41	−1	−7	+35	+10	+7	+6	−8	−27.3	+0.3
409	0.553	+22	+29	−10	+31	+47	+46	−7	+13	+16	+5	+7	+9	−25.2	+0.4
410	0.551	+64	+79	+20	−9	+59	+16	+13	+37	−4	+6	+13	−1	−23.8	+0.4
411	0.604	+50	+29	+20	−6	+31	+33	+8	+12	−5	+8	0	+5	−25.9	+0.8
412	0.514	+70	+17	+8	+33	+88	+27	+17	+10	−9	+27	+26	+3	−24.6	+1.0
413	0.776	−5	+16	+66	+12	+54	+33	−21	+6	+13	+18	+9	+5	−23.3	+1.0
414	0.949	+10	0	+21	+64	−1	+7	−12	−2	−5	+43	−17	−3	−24.8	+1.6
415	0.517	+56	+26	+5	+39	+61	+30	+11	+11	−10	+30	+14	+5	−25.8	+1.7
416	0.558	+26	+16	−1	+41	+45	+43	−4	+6	−13	+31	+6	+9	−26.3	+2.1
417	0.638	+47	+21	+21	0	+28	+36	+6	+8	−5	+13	−4	+8	−25.3	+3.0
418	0.598	+109	+23	+59	+38	+27	+23	+36	+9	+8	+31	+4	+3	−25.0	+3.2
419	0.588	+14	+4	+20	+28	+66	+10	+9	0	+6	−1	+16	−1	−27.2	+3.2
420	0.534	−25	+10	+55	−93	+65	+45	−28	+2	+7	−33	+15	+11	−25.7	+3.3
421	0.512	+101	+2	+12	−12	+66	+25	+34	−1	+9	+7	+15	−13	−27.2	+3.5
422	0.558	+32	+14	+42	+5	+40	+47	0	+4	+2	+16	+1	+13	−25.4	+3.9⁵
423	0.548	+91	+73	+53	+40	+62	−18	+29	+33	+6	+33	+13	−9	−26.6	+4.3
424	0.756	+12	+7	+45	+50	+26	−6	+9	+1	+3	−9	−6	−5	−26.0	+5.6
425	0.427	+87	+29	+54	+36	+31	−30	+28	+11	+6	−2	−4	−13	−25.8	+5.7
426	0.548	+61	−27	+101	−25	+57	+10	+14	−16	+24	+5	+6	+2	−22.7	+6.8
427	0.634	+6	−27	+69	+17	+28	+10	+12	−16	+11	+26	+7	+5	−24.8	+6.8
428	0.658	+33	+18	+47	+65	+35	+45	+2	+6	+5	−10	−6	+16	−24.0	+10.4
429	1.337	+26	+15	+3	+101	−19	−43	0	+3	−10	−24	−35	−14	−23.2	+12.8
430	0.531	+1	+63	+67	−6	+89	+42	−10	+26	+9	+23	+18	+17	−26.7	+14.4
431	0.610	−5	+7	+88	−15	+44	+5	−14	−2	+17	+20	−5	+4	−24.9	+14.9
432	0.588	−32	−13	+47	+11	+77	−12	+7	−11	+2	+36	+10	−2	−27.5	+17.5
433	0.625	+86	+13	+78	+64	+68	+30	+33	0	+14	0	+5	+13	−26.2	+18.0
435	0.829	+38	+57	+68	123	0	−5	+11	+22	+11	−22	−32	+1	−23.8	+22.2
436	0.831	+7	+35	+104	173	+19	−17	−3	+11	+23	−42	−24	−3	−23.7	+24.5
437	0.593	+14	+34	+64	117	+72	+18	0	+10	+10	−14	0	+9	−22.9	+24.7
438	0.758	−5	+24	+63	130	103	+3	−8	+5	+9	+18	+16	+2	−23.4	+25.9
439	0.488	+23	−11	+49	98	82	+33	+8	−13	+4	+4	+2	+12	−23.6	+29.8
440	1.018	−19	+10	+28	151	55	0	−11	−2	+5	−20	−11	0	−25.5	+30.9
441	0.524	+48	+22	+74	134	+90	+52	+23	+3	+10	−10	+6	+18	−26.9	+32.2
442	0.980	+15	+45	+38	190	+60	+50	+6	+14	0	−35	−11	+16	−23.3	+32.8
443	0.582	−25	+27	+23	96	+70	+28	−12	+5	−7	+10	−5	+9	−25.5	+32.8
444	0.659	−6	+13	+66	96	+62	+13	−2	+1	+7	+10	−8	−5	−27.6	+32.9
445	0.615	+5	+73	+93	113	+79	−10	+3	+27	+19	+6	−2	−5	−23.6	+34.6
446	1.061	+7	+30	+55	−157	+29	+8	+5	+6	+4	−13	−27	0	−25.2	+35.8

No.	B. D. or Br.—St.	Mag.	α (1900.0)	δ	α μ_1	α μ_2	α μ_3	δ μ_1	δ μ_2	δ μ_3	μ''_α	μ''_δ
386	902	12.8	2h 15m 8s	56° 41'.5	+0".013‡	+0".015	−0".011	+0".029	−0".005	−0".004	+0".001	+0".004
387	866	13.0	14 59	41.4	+14	−3	+7	+11	−4	+13	+6	+8
388	56°.570 †	8.2	14 57	41.2	−10	+11	+8	+8	−12	+11	+4	−6
389	56°.572 †	10.0	14 59	40.9	−20	+1	+12	+11	−13	+7	+1	+3
390	923	12.4	15 15	40.7	−4	+7	−16	+6	−2	+4	−7	+3
391	1498	12.9	15 21	40.7	−38	−19	+8	+16	+18	+1	−10	+9
392	56°.571 †	9.4	14 57	40.7	−8	−3	−13	+32	−19	0	−9	+3
393	894	13.9	15 6	40.7	+36	−19	−11	+37	+44	−2	−1	+21
394	868	11.7	14 59	40.6	−12	−3	+10	+7	+12	+18	+1	+14
395	1445	14.0	14 49	40.6	+14	+4	+8	−2	+2	+25	+9	+12
396	853	12.4	14 54	40.4	+9	+2	−12	+6	+14	+13	−3	+11
397	861	11.2	14 57	40.0	+7	+2	+9	+4	−3	+11	+3	+6
398	56°.575 †	9.3	15 5	40.0	+12	−3	+4	+1	−3	+11	0	+5
399		12.9	15 5	39.9	+92‡	7‡			+26‡		+42	+26
400	56°.578 †	9.6	15 14	39.9	−13	+5	−7	+9	−6	−6	−6	−2
401	875	13.0	15 1	39.8	−22	−28	+8	−5	0	+1	−8	−1
402	870	12.2	15 0	39.7	−2	+14	+3	−3	−32	−3	+4	−10
403	864	14.0	14 58	39.5	+4‡	+17	−11	+2	+23	+5	0	+9
404	56°.576 †	9.4	15 6	39.5	−15	+12	−24	+19	−5	+7	−13	+7
405	903	11.5	15 8	39.4	−17	−3	−2	+27	+1	+9	−6	+11
406	56°.574 †	8.9	15 3	39.2	−25	+5	+4	−10	−19	+14	−3	0
407	899	13.0	15 7	39.2	+50	0	−5	+4	+8	+10	+10	+8
408	56°.583 †	10.5	15 20	39.1	−3	+32	−13	+5	+10	−6	+1	+1
409	895	12.9	15 6	39.1	−3	+10	−19	−8	+11	+11	−8	+6
410	856	12.9	14 55	39.1	+17	+34	−7	+3	+17	+1	+9	+5
411	911	12.5	15 11	38.7	+12	+9	−8	+5	+4	+7	+1	+6
412	874	13.3	15 1	38.5	+21	−13	−12	+24	+30	+5	−4	+16
413	845	11.2	14 52	38.5	−17	+3	+10	+15	+13	+7	+1	+10
414	56°.573 †	10.2	15 3	37.9	−8	−5	−8	+40	−13	−1	−7	+6
415	909	13.3	15 10	37.8	−15	+8	−13	+27	+18	+7	−1	+15
416	918	12.9	15 13	37.4	0	+3	−16	+28	+10	+11	−7	+15
417	897	12.2	15 6	36.5	+10	+5	−8	+10	0	+10	0	+8
418	886	12.5	15 4	36.3	+40	+6	+5	+28‡	0	+5	+14	+9
419	929	12.6	15 19	36.3	−5	−3	−9	−3	+20	+1	−6	+5
420	905	13.1	15 9	36.2	−24	−1	+4‡	−36	+19	+13‡	−4	+2
421	1492	13.3	15 19	35.9	+38	−4	−12	+5	+19	−11	+2	0
422		12.9	15 7	35.5	+4	+1	−1	+13	+5	+15	+1	+12
423	923b	13.0	15 16	35.2	+33‡	+30	+3	+30	+17	−7	+17	+8
424	910	11.3	15 10	33.9	−5	−2	0	−12	−2	−2	−2	−4
425		14.0	15 9	33.8	+32	+8	+3	−5	−1	−10	+12	−6
426	837	13.0	14 47	32.8	+18	−19	+22	+1	+9	+5	+11	+5
427	877	12.2	15 2	32.8	−8	−19	+8	+23	−4	−2	+3	+4
428	858	12.0	14 56	29.1	+6	+3	+2	−14	−3	+19	+3	+5
429	56°.567 †	8.6	14 50	26.8	+3	0	−12	−28	−32	−10	−5	−20
430	923a	13.1	15 15	25.1	−7	+22	+6	+20	+21	+21	+7	+21
431	879	12.4	15 2	24.7	−11	−5	+14	+16	−2	+8	+3	+7
432	934	12.6	15 21	22.0	+10	−15	−1	+33	+13	+2	−2	+12
433	913b	12.3	15 11	21.6	+36‡	−4	+11	−4	+8	+17	+14	+9
435	852	10.9	14 54	17.4	+14	+19	+9	−27	−30	+6	+13	−11
436	56°.569 †	10.9	14 53	15.2	−1	+8	+21	−47	−22	+3	+12	−16
437	837a	12.6	14 47	15.0	+2	+7	+8	−19	+2	+15	+6	+3
438	842	11.3	14 50	13.8	−6	+2	+7	−23	+18	+8	+2	+3
439	1449	13.5	14 52	9.9	+10	−16	+2	−1	+4	+19	0	+10
440	55°.597 †	9.9	15 5	8.8	−9	−6	−8	−25	−9	+7	−8	−5
441	922	13.2	15 15	7.5	+24	−1	+7	−15	+8	+25	+9	+11
442	55°.594 †	10.1	14 49	7.0	+7	+11	−2	−40	−9	+24	+3	0
443	891	12.7	15 5	7.0	−11	+1	−10	+5	−3	+17	−8	+9
444	931	12.0	15 20	6.9	−1	−5	+4	+6	−6	+3	0	+1
445	844	12.4	14 51	5.3	+4	+24	+17	0	0	+3	+15	+1
446	55°.596 †	9.7	15 3	3.9	+6	+2	+1	−18	−26	+8	+2	−7

Reduction to absolute P.M.: $\Delta \mu''_\alpha = -0".006$; $\Delta \mu''_\delta = +0".007$.

No.	diameter	α			δ			α			δ			x	γ
		M_1	M_2	M_3	M_1	M_2	M_3	m_1	m_2	m_3	m_1	m_2	m_3		
447	0r.987	− 0r.009	+ 0r.022	+ 0r.045	− 0r.206	+ 0r.059	+ 0r.016	+ 0″.001	+ 0″.001	+ 0″.001	− 0″.024	− 0″.017	− 0″.003	− 24p.2	+ 42p.2
448	0.882	+ 5	− 18	+ 62	− 230	+ 75	− 67	+ 10	− 19	+ 6	− 34	− 9	− 32	− 26.3	+ 42.9
449	0.685	− 26	+ 13	+ 7	− 102	+ 80	− 28	− 4	− 3	− 15	+ 32	− 7	− 21	− 27.1	+ 44.6
450	0.606	− 48	+ 52	+ 97	− 244	+ 27	− 98	− 15	+ 15	+ 18	− 33	− 35	− 48	− 24.2	+ 46.4
451	0.658	− 101	+ 24	+ 73	− 166	+ 85	− 46	− 40	+ 1	+ 9	+ 5	− 6	− 30	− 26.6	+ 46.5
452	0.510	− 68	+ 45	+ 92	− 107	+ 168	+ 13	− 21	+ 11	+ 14	+ 40	+ 33	− 13	− 27.1	+ 49.1
	α = 2h 14m 9s to α = 2h 14m 46s.														
453	0.801	+ 43	− 34	− 12	+ 65	− 121	+ 226	− 17	− 7	− 8	+ 37	− 30	− 68	− 16.9	− 57.8
454	0.713	+ 93	+ 39	+ 97	− 15	− 169	+ 260	+ 9	+ 28	+ 29	− 4	− 55	− 47	− 18.1	− 55.5
455	0.661	− 21	− 15	+ 29	+ 17	− 64	+ 326	− 44	− 0	+ 3	+ 9	− 5	− 12	− 21.0	− 52.4
456	0.573	− 21	− 14	+ 77	+ 44	− 81	+ 399	− 46	− 1	+ 21	+ 22	− 16	+ 18	− 19.3	− 51.1
457	0.965	+ 16	− 24	+ 18	+ 25	− 48	+ 296	− 26	− 5	− 0	+ 9	− 4	+ 2	− 20.6	− 45.0
458	0.562	+ 54	− 53	+ 1	+ 15	− 48	+ 327	− 8	− 19	− 6	− 4	− 6	+ 19	− 19.3	− 42.7
459	0.612	+ 64	+ 42	− 23	+ 32	+ 21	+ 239	− 1	+ 26	− 15	+ 12	+ 26	− 6	− 20.7	− 40.8
460	0.654	+ 17	− 50	+ 5	+ 2	+ 8	+ 280	− 28	− 17	− 3	− 4	+ 17	+ 12	− 17.4	− 40.2
461	0.870	+ 23	+ 4	+ 13	+ 70	− 3	+ 231	− 23	+ 9	− 2	+ 30	+ 13	− 5	− 18.7	− 39.7
462	0.558	+ 22	− 29	+ 56	− 24	− 8	+ 262	− 23	− 8	+ 14	− 15	+ 5	+ 20	− 17.8	− 34.8
464	0.641	+ 52	− 30	+ 21	+ 23	− 5	+ 166	− 7	− 10	+ 2	+ 7	+ 2	− 1	− 18.3	− 29.8
465	0.624	− 8	− 20	− 19	− 4	+ 14	+ 160	− 35	− 5	+ 14	− 7	+ 14	− 3	− 21.2	− 29.8
466	0.601	0	− 29	− 19	− 31	− 22	+ 127	− 30	− 10	− 15	− 20	− 3	− 15	− 21.4	− 29.7
467	0.686	+ 69	+ 4	+ 25	+ 13	− 40	+ 146	+ 4	+ 5	+ 1	+ 1	− 15	− 1	− 20.7	− 27.2
468	0.966	+ 12	− 9	− 7	+ 26	− 64	+ 106	− 25	− 1	− 9	+ 8	− 28	− 15	− 19.7	− 27.2
469	0.618	+ 41	− 22	+ 31	+ 24	− 15	+ 122	− 8	− 8	+ 2	+ 8	− 5	− 3	− 22.1	− 24.3
470	0.560	+ 36	− 20	+ 3	+ 29	− 5	+ 73	− 12	− 7	+ 5	+ 13	− 6	− 10	− 18.1	− 19.0
471	0.603	+ 67	+ 29	+ 52	+ 43	+ 19	− 18	+ 6	+ 16	+ 9	+ 20	+ 5	− 36	− 21.5	− 16.4
472	0.546	+ 67	+ 17	+ 57	− 2	+ 38	+ 67	+ 6	+ 10	+ 11	− 2	+ 14	− 7	− 20.9	− 15.9
473	0.522	+ 31	+ 37	+ 63	+ 23	− 10	− 42	− 14	+ 20	+ 16	+ 12	− 12	− 43	− 17.5	− 15.3
474	0.872	+ 10	− 53	− 36	+ 3	− 6	+ 16	− 23	− 23	− 19	+ 2	− 10	− 22	− 18.1	− 14.3
475	0.623	+ 99	+ 14	+ 77	+ 5	− 9	+ 31	+ 22	+ 8	+ 18	− 1	− 13	− 12	− 20.5	− 12.2
476	0.963	+ 60	+ 24	+ 16	+ 5	+ 17	+ 25	+ 4	+ 13	+ 4	+ 4	− 16	− 14	− 21.4	− 11.6
477	0.605	+ 80	+ 25	+ 51	− 14	− 6	+ 32	+ 14	+ 13	+ 8	− 5	− 11	− 10	− 21.5	− 11.4
478	0.512	+ 130	+ 72	+ 16	+ 34	+ 28	+ 14	+ 37	+ 37	− 1	+ 19	+ 4	− 18	− 18.5	− 11.7
480	0.963	+ 13	− 15	0	− 1	− 11	+ 33	− 20	− 6	+ 7	+ 2	− 16	− 9	− 18.0	− 11.3
481	0.451	+ 150	+ 32	+ 19	+ 73	− 1	+ 67	+ 47	+ 17	+ 1	+ 38	− 9	+ 2	− 19.3	− 11.2
482	1.016	+ 34	+ 33	+ 11	+ 31	+ 42	+ 25	+ 9	+ 17	− 5	+ 18	+ 11	− 12	− 20.4	− 10.8
483	0.638	+ 24	+ 13	+ 13	− 16	+ 20	+ 52	− 14	+ 7	− 3	− 5	0	− 2	− 19.8	− 10.4
484	0.508	+ 32	+ 44	+ 55	− 80	− 12	− 6	− 10	+ 23	+ 12	− 36	− 16	− 23	− 19.1	− 9.9
485	0.632	+ 50	+ 3	− 86	− 23	+ 40	+ 67	− 1	+ 2	+ 22	− 7	+ 8	+ 5	− 19.4	− 8.8
486	0.502	+ 57	+ 5	+ 76	+ 21	+ 8	+ 32	+ 2	+ 3	+ 19	+ 16	− 8	− 6	− 18.4	− 7.7
487	0.678	+ 17	+ 63	+ 68	+ 27	+ 30	+ 33	+ 15	+ 31	+ 14	+ 9	+ 3	− 4	− 21.9	− 7.2
488	0.856	+ 19	+ 35	+ 11	− 25	+ 72	+ 26	− 16	+ 18	− 2	− 7	+ 22	− 7	− 17.6	− 6.8
489	0.647	+ 16	+ 29	+ 62	+ 31	+ 34	− 32	− 16	+ 15	+ 14	− 9	+ 3	− 26	− 20.1	− 6.3
490	0.889	+ 18	+ 17	+ 15	+ 12	+ 14	+ 41	− 16	+ 9	− 3	− 0	− 7	− 0	− 19.1	− 6.2
491	0.582	+ 19	+ 37	+ 37	+ 30	+ 18	+ 80	− 13	+ 18	+ 3	+ 20	− 3	+ 13	− 21.7	− 5.9
492	0.476	+ 36	+ 47	+ 92	+ 37	+ 24	+ 41	− 6	+ 23	+ 24	+ 24	− 1	0	− 19.9	− 5.8
493	0.658	+ 22	− 7	+ 35	− 56	+ 33	+ 48	− 13	− 3	+ 3	− 21	+ 3	+ 2	− 20.7	− 5.7
494	0.673	+ 50	+ 25	+ 1	− 1	+ 45	+ 17	+ 1	+ 12	+ 8	+ 6	+ 8	− 8	− 19.7	− 5.4
495	0.542	+ 22	+ 61	+ 38	+ 16	+ 52	+ 42	+ 12	+ 30	+ 4	+ 1	+ 12	+ 1	− 21.1	− 5.2
497	0.631	+ 22	+ 11	+ 50	+ 15	+ 17	+ 27	− 14	+ 5	+ 10	0	− 7	− 4	− 18.2	− 5.0
498	0.602	+ 10	+ 3	+ 36	+ 8	+ 31	− 11	− 19	+ 1	+ 5	+ 3	+ 1	− 17	− 19.0	− 4.8
499	0.633	+ 19	+ 33	+ 18	+ 10	+ 46	+ 20	− 13	+ 16	− 4	+ 2	+ 9	− 5	− 21.7	− 3.9
500	0.620	+ 17	+ 1	+ 38	+ 22	+ 38	+ 60	− 13	0	+ 3	− 2	+ 3	+ 12	− 21.8	− 1.9
501	0.981	+ 17	+ 30	+ 67	− 40	− 15	+ 3	− 15	+ 14	+ 16	− 10	− 24	− 8	− 18.0	− 1.7
502	0.594	+ 24	− 17	+ 5	− 8	+ 48	0	− 10	− 9	− 7	+ 6	+ 7	− 9	− 19.6	− 1.5
503	0.792	+ 0	+ 20	+ 35	− 2	+ 39	+ 35	− 20	+ 9	+ 2	+ 8	+ 3	+ 3	− 22.5	− 1.3
504	0.613	+ 56	− 5	+ 20	− 25	+ 46	+ 34	+ 7	− 3	− 3	+ 3	+ 7	+ 3	− 22.4	− 0.8
505	1.064	− 21	+ 25	+ 47	− 33	− 7	+ 23	− 31	+ 11	+ 7	− 6	− 20	0	− 21.6	− 0.5
506	0.761	+ 28	+ 30	+ 28	− 23	+ 41	− 13	− 6	+ 14	− 1	− 0	+ 3	− 12	− 22.1	− 0.4
508	0.540	+ 18	+ 10	+ 35	− 46	+ 36	− 7	− 14	+ 4	+ 5	− 11	− 1	− 10	− 17.9	− 0.2
509	0.649	+ 38	− 36	− 17	− 1	+ 35	+ 49	− 1	− 19	− 16	+ 10	− 0	− 9	− 22.5	− 0.1
510	0.748	+ 25	+ 10	− 6	− 4	+ 96	+ 20	− 8	+ 4	− 11	+ 10	+ 28	0	− 20.0	+ 0.9

No.	B. D. or Br.—St.	Mag.	1900.0 α	δ	α μ₁	μ₂	μ₃	δ μ₁	μ₂	μ₃	μ″α	μ″δ
447	854	10.1	2h 14m 55s	55° 57'.6	0".000	− 0".003	− 0".002	− 0".030	− 0".016	+ 0".007	− 0".002	− 0".008
448	908	10.6	15 9	56.9	+ 9	− 23	+ 3	− 40	− 8	− 22‡	− 2	− 23
449		11.8	15 15	55.2	− 5	− 7	− 18‡	+ 26	− 6	− 10‡	− 12	− 0
450		12.5	14 55	53.4	− 17	+ 11	+ 15‡	− 39	− 34	− 37‡	+ 6	− 37
451	915	12.0	15 11	53.3	− 42	− 3	+ 6‡	− 1	− 5	− 19‡	− 8	− 11
452		13.3	15 15	50.7	− 23‡	+ 7	+ 11‡	+ 34‡	+ 34‡	− 1‡	+ 1	− 16

α = 2h 14m 9s to α = 2h 14m 46s.

No.	B. D. or Br.—St.	Mag.	1900.0 α	δ	α μ₁	μ₂	μ₃	δ μ₁	μ₂	μ₃	μ″α	μ″δ
453		11.1	2h 14m 9s	57° 37'.0	− 21	− 7	− 12‡	+ 31‡	− 24	− 61‡	− 13	− 29
454		11.6	14 17	34.7	+ 6	+ 28	+ 25‡	+ 10‡	− 49	− 41‡	+ 21	− 35
455	812	12.0	14 39	31.6	− 46	− 0	− 1	+ 4	+ 1	− 7‡	− 12	− 2
456	789	12.8	14 26	30.3	− 48‡	− 0	+ 17	+ 17	− 10‡	+ 23‡	− 3	+ 13
457	57°.550 †	10.2	14 36	24.3	− 27	− 6	− 3	+ 4	+ 2	+ 6	− 10	+ 4
458	788	12.8	14 26	21.9	− 8‡	− 20	− 9	+ 1‡	− 0	+ 23	− 11	+ 11
459	807	12.4	14 36	20.0	− 1	+ 25	− 18	+ 7	+ 32	− 3	− 3	+ 8
460	750	12.1	14 12	19.5	− 28‡	− 18	− 6	− 9	− 23	+ 16	− 14	+ 11
461	1989	10.7	14 21	19.4	− 23	+ 8	− 5	+ 25	+ 19	− 1	− 6	+ 10
462	756	12.9	14 14	14.2	− 22	− 9	+ 11	− 20	+ 11	+ 23	− 2	+ 9
464	766	12.2	14 18	9.1	− 5	− 12	− 1	+ 2	+ 7	− 2	− 5	+ 3
465	811	12.3	14 39	9.1	− 33	− 7	− 17	+ 11	+ 19	− 1	+ 18	+ 1
466	816	12.5	14 40	8.9	− 28	− 12	− 18	+ 24	− 2	− 13	− 19	− 12
467	804	11.8	14 35	6.6	+ 6	+ 3	− 2	+ 3	− 10	+ 1	+ 1	− 3
468	56°.560 †	10.2	14 27	6.6	− 23	− 3	− 12	+ 4	− 23	− 13	− 12	− 11
469	829	12.4	14 45	3.7	− 5‡	− 10	− 1	+ 4	− 0	− 1	− 4	− 0
470	1394	12.9	14 15	56° 58'.4	− 9	− 9	− 7	+ 8	− 1	− 8	− 8	− 2
471	815	12.5	14 40	55.8	+ 9	+ 14	+ 6	+ 16	+ 10	− 34	+ 9	− 10
472	805	13.0	14 36	55.3	+ 9	+ 8	+ 9	+ 6	+ 19	− 5	+ 9	+ 1
473	748	13.2	14 11	54.7	− 11	+ 18	+ 14	+ 7	+ 7	− 41	+ 9	− 20
474	56°.558 †	10.6	14 15	53.8	− 20	− 25	− 21	+ 3	− 5	− 20	− 22	− 12
475	798	12.3	14 33	51.7	+ 26	− 6	+ 16	− 5	− 8	+ 10	+ 16	− 8
476	56°.562 †	10.2	14 39	51.0	+ 8	+ 11	− 6	+ 0	− 11	+ 12	+ 2	− 9
477	813	12.5	14 40	50.9	+ 18	+ 11	+ 6	− 9	− 6	+ 8	+ 10	− 8
478	765	13.3	14 18	51.1	+ 41‡	+ 35	− 3	+ 14	+ 9	+ 16	+ 17	− 2
480	56°.559 †	10.2	14 14	50.8	− 16	− 8	− 9	− 3	− 11	− 7	− 11	− 7
481	786	13.9	14 24	50.6	+ 51	+ 15	− 3	+ 34	− 4	+ 4	+ 15	+ 9
482	56°.561 †	9.9	14 32	50.3	− 5	+ 15	− 7	+ 14	+ 16	− 10	− 1	+ 2
483	1990	12.2	14 27	49.9	− 10	+ 5	− 5	− 9	+ 5	− 0	− 4	− 1
484	785	13.3	14 22	49.4	− 6	+ 21	+ 10	− 40	+ 12	− 21	+ 9	− 23
485	1408	12.3	14 24	48.3	+ 3	+ 0	+ 20	− 11	+ 12	+ 7	+ 11	+ 4
486	764	13.4	14 17	47.1	+ 6‡	+ 1	+ 17	− 11	− 4	+ 4	+ 10	− 0
487	823	11.9	14 42	46.6	− 11	+ 29	+ 12	− 13	+ 7	− 2	+ 10	− 2
488	749	10.7	14 11	46.2	− 12	+ 16	− 4	− 12	+ 26	− 5	− 1	+ 1
489	793a	12.1	14 29	45.9	− 12	+ 13	+ 12	− 13	+ 7	− 24‡	+ 6	− 13
490	783	10.6	14 22	45.7	− 12	+ 7	− 5	− 4	+ 3	+ 2	− 4	− 1
491	819	12.7	14 41	45.4	− 9	+ 15	+ 1	+ 16	+ 1	+ 15	+ 2	+ 12
492	792	13.6	14 28	45.3	− 2	+ 21	+ 22	+ 20	+ 3	+ 2	+ 16	+ 7
493	801	12.0	14 34	45.1	− 9	− 5	+ 1	+ 25	+ 7	+ 4	− 3	− 2
494	790	11.9	14 26	44.9	+ 5	+ 10	− 10	+ 2	+ 12	− 6	− 1	+ 0
495	808	13.0	14 36	44.8	+ 8	+ 28	+ 2	+ 5	+ 16	+ 3	+ 6	+ 4
497	761	12.3	14 15	44.6	− 10	+ 3	− 8	− 5	− 3	− 2	− 2	− 3
498	780	12.5	14 21	44.3	− 15	− 1	+ 3	− 2	+ 5	+ 15	− 2	+ 7
499	820	12.3	14 41	43.4	− 9	+ 13	− 6	− 2	+ 13	− 3	− 2	+ 1
500	821	12.4	14 41	41.4	− 9	− 3	+ 1	− 6	+ 7	+ 14	− 2	+ 7
501	754	10.1	14 14	41.2	+ 11	+ 12	+ 14	+ 15	− 20	+ 5	+ 7	− 11
502	787	12.6	14 25	41.0	− 6	+ 12	− 9	− 1	+ 11	− 6	− 9	− 0
503	832	11.1	14 46	40.9	− 16	+ 6	+ 0	+ 4	+ 7	+ 5	− 2	+ 5
504	830	12.4	14 46	40.3	+ 11	− 6	− 5	− 7	+ 11	+ 5	− 1	+ 3
505	56°.563 †	9.7	14 40	40.0	− 27	+ 8	+ 5	− 10	+ 16	+ 3	− 2	− 5
506	826	11.3	14 43	39.9	− 2	+ 11	− 3	− 4	+ 7	+ 10	− 1	+ 4
508	752	13.0	14 13	39.8	− 10	+ 2	+ 3	− 16	+ 3	− 7	− 0	+ 7
509	833	12.1	14 46	39.6	+ 3	− 22	− 18	+ 6	+ 4	+ 11	− 14	+ 8
510	793	11.4	14 28	38.7	− 4	+ 1	− 13	+ 6	+ 32	+ 3	− 7	+ 11

Reduction to absolute P.M. : Δ μ″α = − 0".006; Δ μ'δ = + 0".007.

No.	diameter	α M₁	α M₂	α M₃	δ M₁	δ M₂	δ M₃	α m₁	α m₂	α m₃	δ m₁	δ m₂	δ m₃	z	γ
511	0r.730	+0r.040	+0r.015	+0r.047	−0r.014	+0r.044	+0r.003	0″.000	+0″.006	+0″.007	+0″.005	+0″.003	−0″.005	−21p.6	+1p.6
512	0.570	+34	−6	+38	+10	+60	+48	−5	−4	+6	+18	+10	+11	−18.2	+2.0
514	0.636	+38	−31	+68	+57	+50	+75	0	−17	+13	+40	+6	+20	−22.1	+2.0
516	0.725	+64	+45	+18	0	+57	+12	+12	+20	−5	+14	+9	0	−22.3	+3.2
517	0.621	+26	+17	+38	−3	+59	+32	−6	+6	+3	+13	+9	+7	−20.7	+3.4
518	0.535	+59	+33	+78	−4	+81	+26	+9	+14	+18	+15	+18	+5	−19.2	+4.8
519	0.728	+23	+2	+9	+14	+53	+33	−8	−1	−7	+23	+5	+8	−20.4	+5.2
520	0.559	+64	+63	+75	+38	+76	+50	+14	+29	+15	+36	+16	+15	−21.7	+6.2
521	0.580	+107	+158	+256	−175	−70	−162	+36	+75	+78	−65	−57	−57	−22.1	+9.1
522	0.830	+32	+22	+84	−57	+77	+15	0	+8	+18	−7	+14	+5	−22.2	+9.1
523	0.662	−5	+5	+58	−51	+97	−28	−20	0	+12	−4	+23	−10	−19.0	+9.3
524	0.624	+29	+53	+92	−46	+100	+19	−1	+23	+22	0	+24	+7	−20.9	+10.0
525	0.601	−12	+19	+29	−34	+59	−14	−22	+6	+1	+7	+3	−5	−19.0	+11.0
526	0.652	+27	+5	+45	−31	+77	+14	−2	+1	+7	+10	+11	−4	−18.7	+11.8
527	0.741	+29	+41	−11	+40	+61	+33	−1	+17	−13	+5	+3	+12	−18.7	+12.2
528	0.782	−6	−17	+79	−41	+43	+4	−18	−13	+18	+4	−5	+2	−20.6	+12.3
529	0.758	+26	+19	+57	−66	+69	+30	−2	+5	+11	+6	+6	+12	−18.9	+13.2
530	0.460	+51	+30	+52	−2	+66	+23	+11	+10	+10	+29	+2	+10	−17.9	+16.3
531	0.502	+40	+27	+34	−15	+70	+12	+9	+8	+1	+27	+3	+7	−20.9	+19.2
532	0.450	+10	−3	+66	−55	+110	−4	−1	+8	+12	+19	+17	+1	−21.3	+26.4
533	0.663	−41	+15	+2	−109	+55	−4	−26	0	−9	−4	−11	0	−19.4	+28.2
535	0.619	−71	+29	+46	−199	+77	+48	−35	+6	+3	−34	−4	+14	−21.8	+35.6
536	0.696	−34	+33	+49	−166	+98	+40	−16	+6	+6	−13	+4	+9	−19.2	+38.2
537	0.412	−38	+55	+18	−80	+144	+52	−18	+17	+5	+29	+26	+13	−19.5	+38.3
538	0.563	−9	+33	+85	−204	+96	−15	−3	+6	−20	−29	+1	−11	−18.3	+38.7
539	0.781	−20	+73	+58	−147	+118	+23	−6	+25	+8	+2	+12	+1	−21.2	+40.7
540	0.658	−7	+26	+70	−174	+63	+23	+2	+1	+13	−4	−17	−2	−18.8	+43.7
541	0.592	−59	+23	+68	−113	+103	−4	−22	0	+12	+31	+1	−12	−19.4	+46.1
542	0.460	+3	+16	+79	−87	+141	+10	+13	−5	+15	+55	+17	−16	−20.5	+51.0
543	0.704	−74	+59	+90	−145	+77	+26	−22	+15	+17	+34	−16	−15	−21.3	+53.8

α = 2h 13m 33s to α = 2h 14m 10s.

No.	diameter	α M₁	α M₂	α M₃	δ M₁	δ M₂	δ M₃	α m₁	α m₂	α m₃	δ m₁	δ m₂	δ m₃	z	γ
544	1.120			−63	+141	−82	+313			−23	+81	−10	−57	−12.1	−62.8
545	1.032	+12	−6	+34	+94	−36	+325	−32	+6	+8	+46	0	+6	−15.5	−47.0
546	0.598	+12	−31	−1	−34	−30	+267	−33	−6	−3	17	0	−5	−14.1	−44.1
547	1.194	+2	−36	−6	+70	−75	+236	−41	−9	−3	+34	−25	−9	−12.2	−41.5
548	0.532	−45	−26	+8	+36	+37	+284	−61	−4	+1	+16	+29	+13	−13.4	−40.0
549	0.543	+100	+5	−15	−24	−78	+246	+11	+10	−7	−14	−30	+8	−12.7	−37.3
550	0.796	−10	−48	−62	+28	+14	+196	−40	−18	−25	+11	+11	+8	−14.9	−30.5
552	0.562	+27	−6	+1	+30	+36	−75	+21	+1	+2	+14	+12	−13	−12.4	−20.8
553	1.069	+7	−1	+18	+43	−17	+97	+30	+3	+2	+20	−13	−4	−14.4	−20.4
554	0.568	−24	+41	+18	+84	+2	+52	−44	+24	−9	+41	−4	−19	−13.5	−20.1
555	0.553	−13	−18	−19	+40	+29	+94	−40	−5	−9	−20	+8	−4	−13.4	−19.8
556	0.723	+29	+13	+72	+9	−13	−69	−15	−4	+20	+5	−14	−52	−16.8	−15.2
557	0.788	−19	+4	+52	+42	−9	−29	−38	+4	+13	+21	−13	−37	−16.7	−14.5
558	0.656	+54	+34	+41	+28	+9	+12	−4	+19	+11	+16	−6	−30	−14.1	−13.7
559	0.713	+7	+24	+47	+7	+14	0	−27	+14	+13	+6	−3	−25	−14.5	−13.2
560	0.498	+64	+16	+39	+28	+10	+9	+1	+5	+10	+17	−6	−22	−14.0	−12.8
561	1.091	+53	−14	+47	+14	−28	+30	+4	−5	+14	+11	−26	−12	−12.7	−11.6
562	0.563	+15	−8	−22	−20	+19	+34	−22	−2	−11	−6	−3	−11	−13.5	−11.6
563	0.672	+39	0	+17	+23	+23	+46	−10	+2	+2	+14	0	−6	−15.2	−11.4
565	0.590	+4	−72	+47	+28	+55	+54	−26	−34	+13	+20	+12	+3	−13.5	−6.8
566	0.695	+26	−19	+32	+10	+68	+32	−14	−9	+7	+12	+17	+3	−14.6	−6.3
568	1.115	+13	−5	+30	+16	+4	+2	−18	−2	+5	+1	−15	−10	−16.7	−2.9
569	0.971	+8	−15	−19	+2	+55	−7	−20	−8	+2	+11	+9	−12	−15.6	−2.3
570	0.583	+113	−21	+7	+29	+40	+88	+30	−11	0	+25	0	+21	−13.0	−2.1
571	0.778	−13	−5	−9	+8	+75	+23	−29	−3	−10	+14	+19	−1	−17.5	−1.3
572	0.676	+21	+1	+52	−12	+21	+34	−14	−1	+15	+8	−12	+6	−13.3	+2.2
573	0.680	+47	−7	+62	−13	+58	+27	+2	−5	+15	+9	+6	+6	−16.9	+4.4
574	0.624	+96	+22	+55	−18	+40	+19	+26	+9	+14	+8	−3	+3	−15.6	+5.2
576	0.603	+94	+64	+141	−38	+8	+32	+26	+29	+43	0	−19	−14	−16.9	+6.0
577	0.773	+21	+9	+60	+33	+25	−4	−10	+2	+15	+35	−12	−3	−15.7	+6.4

No.	B. D. or Br.—St.	Mag.	1900.0 α	1900.0 δ	α μ_1	α μ_2	α μ_3	δ μ_1	δ μ_2	δ μ_3	μ''_α	μ''_δ
511	814	11.5	2h 14m 40s	56° 38'.0	+ 0".004	+ 0".003	+ 0".005	+ 0".001	+ 0".007	− 0".002	+ 0".004	+ 0".001
512	757	12.8	14 15	37.6	− 1	− 6	+ 4	+ 13	+ 14	+ 14	+ 0	+ 14
514	824	12.2	14 43	37.5	+ 4	− 20	+ 11	+ 36	+ 10	+ 23	+ 1	+ 23
516	827	11.6	14 44	36.4	+ 16	+ 17	− 7	+ 10	+ 13	+ 3	+ 5	+ 7
517	799	12.4	14 33	36.1	− 2	+ 3	+ 1	+ 8	+ 13	+ 10	+ 1	+ 10
518	782	13.1	14 22	34.9	+ 13	+ 11	+ 16	+ 10	+ 22	+ 8	+ 14	+ 12
519	794	11.5	14 30	34.4	+ 4	− 4	− 9	+ 18	+ 9	+ 11	− 6	+ 12
520	818	12.9	14 40	33.4	+ 18	+ 26	+ 13	+ 32	+ 19	+ 18	+ 17	+ 22
521	822	12.7	14 42	30.5	+ 40	+ 72	+ 76	− 69	− 54	− 54	+ 66	− 58
522	56°.564 †	10.9	14 43	30.4	+ 4	+ 5	+ 16	+ 11	+ 17	+ 8	+ 10	+ 5
523	774	12.0	14 20	30.4	− 17	− 3	− 10	− 9	+ 26	− 6	0	+ 1
524	800	12.3	14 34	29.6	+ 2	+ 20	+ 20	− 5	+ 27	+ 11	+ 15	+ 11
525	773	12.5	14 20	28.6	− 19	+ 3	− 1	+ 2	+ 6	− 1	4	+ 1
526	767	12.1	14 18	27.9	+ 1	− 4	+ 5	+ 5	+ 14	0	+ 2	+ 5
527	768	11.4	14 18	27.5	+ 2	+ 14	− 15	0	+ 6	+ 16	− 3	+ 9
528	797	11.2	14 31	27.3	− 15	− 16	+ 16	− 1	− 2	+ 6	0	+ 2
529	771	11.3	14 19	26.4	+ 1	+ 2	+ 9	− 11	+ 9	+ 16	+ 5	+ 8
530	1390	13.8	14 12	23.3	+ 14	+ 7‡	+ 8	+ 23	+ 5	+ 15	+ 9	+ 14
531	1422	13.4	14 34	20.4	+ 12	+ 5	− 1	+ 22	+ 6	+ 12	+ 4	+ 13
532	804b	13.9	14 36	13.4	+ 1	− 11	+ 10	+ 13	+ 19	+ 7	+ 2	+ 11
533		12.0	14 22	11.7	− 25	− 3	− 11	− 10	− 9	+ 7	12	− 1
535	810	12.4	14 38	4.2	− 35	+ 3	+ 1	− 40	− 2	+ 22	7	0
536	775	11.8	14 20	1.7	− 16	+ 3	+ 4	− 20	+ 5	+ 18	1	+ 5
537	781	14.0	14 22	1.5	− 18‡	+ 14	− 7‡	+ 22	+ 27‡	+ 22‡	4	+ 23
538	1392	12.8	14 13	1.2	− 4	+ 3	+ 18	− 37	+ 2	− 2	+ 9	− 10
539	803	11.2	14 34	55° 59'.2	− 7	+ 22	+ 6	− 5	+ 13	+ 11	+ 7	+ 7
540	762	12.0	14 16	56.2	+ 1	− 2	+ 11	− 12	+ 16	+ 9‡	+ 5	+ 2
541	776	12.6	14 21	53.8	− 24	− 3	+ 10	+ 23	+ 2‡	+ 1‡	+ 2	+ 6
542		13.8	14 28	49.0	+ 10‡	− 8‡	+ 13‡	+ 47‡	+ 17‡	+ 3‡	+ 7	+ 14
543		11.7	14 34	46.2	− 26	+ 12	+ 15‡	+ 25‡	− 16	− 1‡	+ 4	+ 2
	α = 2h 13m 33s to		α = 2h 14m 10s.									
544	57°.544	9.4	2h 13m 34s	57° 42'.1			− 26‡	+ 73‡	− 4	− 48‡	26	7
545	732	9.8	13 58	26.2	− 33	+ 5	+ 5	+ 40‡	+ 6	+ 11	4	+ 17
546	715	12.5	13 48	23.4	− 34	− 7	− 6	− 23‡	+ 6	0	13	− 4
547	57°.545 †	9.1	13 33	20.8	− 41	− 10	− 5	+ 27	− 19	− 4	15	0
548	709	13.1	13 42	19.3	− 61	− 5	− 1	+ 10	+ 35	+ 18	17	+ 20
549	700	13.0	13 37	16.7	+ 12	+ 9	− 9	− 20‡	− 24	+ 12	+ 1	− 5
550	724	11.1	13 52	9.9	− 38	− 19	− 27	+ 5	+ 16	+ 11	28	+ 11
552	693	12.8	13 34	0.2	− 18	− 1	− 3	+ 8	+ 17‡	− 10	6	+ 1
553	56°.549 †	9.7	13 48	56° 59'.9	− 27	+ 1	0	+ 14	− 8	− 1	6	+ 1
554	708	12.8	13 42	59.6	− 41	+ 22	− 10	+ 35	+ 1	− 16	10	+ 1
555	704	12.9	13 41	59.3	− 37‡	− 7	− 10	− 26	+ 13	− 1	16	− 4
556	741	11.6	14 6	54.6	− 12	− 6	+ 18	0	− 9	− 50	+ 4	− 27
557	56°.552 †	11.1	14 5	54.0	− 35	+ 2	+ 11	+ 16	− 8	− 35	3	− 15
558	713	12.1	13 46	53.1	− 1	+ 17	− 10	+ 10	− 1	− 27	+ 9	+ 11
559	718	11.6	13 49	52.8	− 24	+ 12	+ 12	0	+ 2	− 22	+ 3	+ 10
560	712	13.4	13 45	52.3	+ 4	− 7	+ 9	+ 11	− 1	− 19	+ 4	+ 7
561	56°.548 †	9.6	13 35	51.1	− 1	− 7	+ 13	+ 5	− 22	− 9	+ 4	− 9
562	706	12.8	13 41	51.1	− 19	− 4	− 12	− 12	+ 1	− 8	12	− 7
563	725	11.9	13 54	50.9	− 7	− 0	+ 1	+ 9	+ 4	− 3	1	+ 2
565	703	12.6	13 41	46.3	− 22	− 36	+ 12	− 14	+ 16‡	+ 6	8	+ 10
566	719	11.8	13 49	45.9	− 10	− 11	+ 6	+ 6	+ 21	0	2	+ 7
568	56°.553 †	9.5	14 4	42.5	− 14	− 4	+ 3	− 4	− 11	− 7	3	− 7
569	56°.551 †	10.1	13 56	41.9	− 16	− 10	+ 1	+ 5	+ 13	− 9	6	0
570	701	12.7	13 37	41.7	+ 34	− 13	− 1	+ 19	+ 4	+ 24‡	+ 5	+ 18
571	56°.557 †	11.2	14 10	40.9	− 25	− 5	− 12	+ 9	+ 23	+ 2	13	+ 9
572	702	11.9	13 39	37.3	− 10‡	− 3	+ 14	+ 2	− 8	+ 9	+ 4	+ 3
573	738	11.9	14 5	35.2	+ 6	− 7	+ 14	+ 3	+ 10	+ 9	+ 7	+ 8
574	727	12.3	13 56	34.4	+ 30	+ 7	+ 13	+ 2	− 0	+ 6	16	+ 3
576	739	12.5	14 5	33.7	+ 30	+ 27	+ 42	− 6	− 16	− 11	35	− 11
577	729	11.2	13 56	33.2	− 7	0	+ 14	+ 29	− 9	+ 1	+ 5	+ 5

Reduction to absolute P.M.: $\Delta \mu''_\alpha = -0".006$; $\Delta \mu''_\delta = +0".007$.

No.	diameter	α M₁	M₂	M₃	δ M₁	M₂	M₃	α m₁	m₂	m₃	δ m₁	m₂	m₃	x	γ
578	0r.734	− 0r.003	− 0r.019	+ 0r.043	+ 0r.005	+ 0r.006	+ 0r.021	− 0".021	− 0".012	+ 0".008	+ 0".021	− 0".021	+ 0".006	− 16v.7	+ 7v.1
578*			+ 53			+ 17			+ 23			− 18		− 12.7	+ 8.6
579	0.502	− 45	− 5	− 12	− 26	+ 56	+ 43	− 42	− 6	− 8	+ 9	0	+ 14	− 12.8	+ 8.7
580	0.520	+ 43	+ 24	+ 19	+ 49	+ 44	+ 10	+ 1	+ 8	+ 3	+ 46	− 5	+ 3	− 13.2	+ 8.7
581	0.632	+ 12	+ 19	+ 18	− 11	+ 89	− 18	− 13	+ 6	+ 1	+ 19	+ 16	− 6	− 14.9	+ 10.9
582	1.161	− 3	+ 26	+ 89	− 49	+ 50	− 36	− 19	+ 9	+ 25	+ 1	− 4	− 12	− 14.9	+ 11.8
583	0.482	− 4	− 21	+ 72	− 11	+ 86	+ 2	− 18	− 14	+ 18	+ 22	+ 13	+ 2	− 16.8	+ 14.0
584	0.603	+ 37	+ 15	+ 25	− 31	+ 45	+ 33	+ 3	+ 3	+ 2	+ 14	− 8	+ 14	− 16.8	+ 15.1
585	1.376	+ 10	+ 24	+ 37	− 50	+ 8	− 27	− 10	+ 7	+ 5	+ 4	− 26	− 7	− 17.4	+ 15.3
586	1.091	− 14	+ 43	+ 71	− 68	+ 23	+ 45	− 21	+ 16	+ 17	− 3	− 19	+ 18	− 17.6	+ 16.0
587	1.132	+ 18	+ 8	+ 79	− 100	+ 5	+ 13	− 4	− 1	+ 21	− 16	− 29	+ 7	− 17.3	+ 18.2
588	0.811	+ 7	− 24	+ 57	− 103	+ 36	+ 30	− 7	− 18	+ 13	− 11	− 17	+ 14	− 16.9	+ 22.2
589	0.636	+ 22	+ 50	+ 94	− 141	+ 85	+ 2	+ 5	+ 16	+ 26	− 15	0	+ 1	− 15.1	+ 30.6
590	0.560	− 5	+ 77	+ 56	− 143	+ 61	+ 53	− 8	+ 29	+ 13	− 15	+ 11	+ 18	− 14.7	+ 30.8
591	0.518	+ 46	− 3	+ 100	− 83	+ 136	+ 99	+ 19	− 11	+ 28	+ 18	+ 24	+ 33	− 15.2	+ 33.2
592	0.469	− 33	+ 43	+ 72	− 150	+ 140	+ 40	− 13	+ 9	+ 18	+ 3	+ 19	+ 5	− 14.5	+ 41.8
593	0.861	− 22	+ 25	+ 72	− 181	+ 77	− 8	− 6	0	+ 16	− 7	− 11	− 14	− 15.8	+ 44.2
594	0.546	− 97	− 9	+ 89	− 166	+ 57	− 18	− 41	− 17	+ 22	+ 2	− 21	− 18	− 17.2	+ 45.1
595	0.603	− 50	− 15	+ 119	− 149	+ 144	+ 27	− 14	− 21	+ 32	+ 24	+ 17	− 10	− 15.8	+ 50.9
596	0.600	− 53	+ 37	+ 100	− 138	+ 77	+ 45	− 14	+ 4	+ 25	+ 32	− 16	− 5	− 17.3	+ 52.0
				α = 2h 12m 55s to α = 2h 13m 35s.											
599	0.720	+ 131	− 58	− 11	+ 46	− 79	+ 281	+ 19	− 15	− 1	+ 29	− 18	− 38	− 7.9	− 54.8
600	1.140	+ 16	− 118	− 105	+ 27	− 163	+ 168	− 35	− 46	− 37	+ 18	− 59	− 70	− 10.6	− 52.7
601	0.904	− 93	− 55	− 34	+ 59	− 53	+ 348	+ 2	− 15	− 10	+ 32	− 10	− 6	− 8.7	− 49.3
602	0.701	+ 14	− 52	− 11	+ 11	− 61	+ 403	− 35	− 15	− 4	+ 7	− 15	+ 33	− 10.7	− 47.2
603	0.484	+ 85	− 31	− 37	− 7	− 57	+ 235	− 2	− 4	− 10	− 2	− 18	− 13	− 7.0	− 43.1
604	0.600			− 17		+ 3	+ 240			7		+ 10	0	− 11.8	− 38.8
605	0.617	+ 86	− 53	− 13	+ 2	+ 62	+ 246	+ 3	− 18	− 6	0	+ 39	+ 4	− 11.7	− 38.5
606	0.523	+ 3	− 38	− 34	− 30	− 13	+ 239	− 39	− 11	− 10	− 16	+ 3	+ 14	− 8.5	− 34.2
607	0.620	+ 125	+ 52	+ 23	+ 15	+ 7	+ 150	+ 20	+ 33	+ 11	+ 6	+ 5	− 15	− 7.5	− 32.9
608	0.522	+ 83	+ 63	+ 29	− 33	− 118	+ 162	+ 1	+ 37	+ 13	− 17	− 59	0	− 7.3	− 29.3
609	0.673	+ 59	− 7	− 32	+ 24	+ 12	+ 201	− 10	+ 3	− 8	+ 11	+ 4	+ 14	− 8.3	− 28.8
610	0.580	+ 65	0	− 61	+ 58	+ 15	+ 154	+ 5	+ 6	− 22	+ 27	+ 6	+ 3	− 11.4	− 26.4
612	0.923	+ 55	− 31	− 5	+ 10	+ 48	+ 111	− 9	− 10	0	+ 5	− 31	− 1	− 8.6	− 20.8
613	0.634	+ 78	+ 10	− 8	+ 25	+ 13	+ 127	+ 4	+ 9	+ 4	+ 12	0	+ 7	− 12.2	− 19.7
615	0.539	+ 38	+ 25	+ 8	− 28	− 11	+ 44	− 14	+ 15	+ 3	− 11	− 16	− 13	− 10.5	− 15.2
616	0.614	+ 25	− 16	− 8	+ 14	− 2	+ 19	− 19	− 5	− 5	− 10	− 13	− 17	− 11.9	− 11.7
617	0.565	+ 47	− 21	+ 10	− 4	+ 34	+ 69	− 7	− 9	+ 3	− 5	0	+ 7	− 10.9	− 8.2
618	0.512	+ 30	+ 10	+ 27	+ 26	+ 37	+ 57	+ 14	+ 5	+ 10	+ 20	0	+ 5	− 9.6	− 6.0
619	0.630	+ 76	+ 41	+ 94	+ 18	+ 20	+ 43	+ 9	+ 20	+ 31	+ 17	− 7	0	− 12.2	− 5.8
621	0.803	+ 52	− 5	+ 11	+ 4	+ 26	+ 17	− 3	− 2	+ 7	+ 11	− 7	− 6	− 7.9	− 4.0
623	0.773	+ 43	+ 7	+ 24	− 31	+ 49	+ 7	− 6	+ 3	+ 8	− 5	+ 4	− 8	− 9.7	− 2.8
624	0.582	+ 81	+ 17	+ 40	− 44	+ 52	+ 45	+ 13	+ 8	+ 13	+ 33	+ 5	+ 6	− 10.8	− 1.9
625	0.451	+ 52	+ 3	+ 19	+ 47	+ 22	+ 50	+ 1	+ 1	+ 7	+ 35	+ 10	+ 8	− 10.1	− 1.0
626	0.721	+ 10	+ 27	+ 16	− 13	+ 100	+ 14	+ 22	+ 12	+ 7	+ 7	+ 26	− 3	− 8.4	− 0.2
627	0.615	+ 27	+ 36	+ 15	+ 25	+ 47	+ 33	+ 12	+ 17	+ 3	+ 25	+ 2	+ 4	− 12.0	+ 0.0
628	0.570	+ 33	+ 16	+ 20	+ 17	+ 13	+ 49	+ 9	+ 7	+ 4	+ 21	+ 15	+ 9	− 12.4	+ 0.3
629	0.673	+ 57	+ 26	− 26	+ 25	+ 60	+ 81	+ 1	+ 12	− 8	+ 26	+ 6	+ 21	− 9.2	+ 0.5
630	1.191	+ 19	− 7	− 22	+ 25	+ 25	+ 11	− 17	− 5	− 8	+ 1	− 11	− 3	− 9.7	+ 1.3
631	0.521	+ 25	+ 21	+ 20	+ 31	+ 31	+ 47	+ 12	+ 9	+ 5	+ 30	− 8	+ 12	− 11.9	+ 3.3
632	0.688	+ 13	− 3	+ 11	+ 29	+ 50	+ 62	− 18	− 4	− 1	+ 31	− 1	+ 18	− 8.1	+ 4.0
633	0.521	+ 35	− 59	+ 11	− 2	+ 60	− 6	− 7	− 31	+ 5	+ 17	+ 3	− 6	− 8.8	+ 5.1
634	0.654	+ 19	− 34	+ 6	− 24	+ 18	+ 50	− 12	− 19	0	+ 8	+ 17	+ 16	− 12.3	+ 6.8
635	0.919	− 21	− 3	+ 14	− 26	− 35	+ 63	− 32	− 4	+ 3	+ 8	− 10	+ 20	− 11.6	+ 7.7
636	0.570	+ 19	+ 6	+ 6	− 47	+ 42	+ 19	− 9	− 2	+ 2	+ 4	− 11	+ 8	− 9.6	+ 13.2
637	0.501	+ 36	+ 11	+ 32	− 46	+ 49	+ 37	0	0	+ 8	+ 7	− 7	+ 15	− 12.6	+ 15.1
639	0.614	+ 14	+ 6	+ 50	− 64	+ 62	+ 32	− 6	− 4	+ 16	+ 7	− 6	+ 14	− 10.6	+ 20.7
640	0.518	+ 58	+ 1	− 2	− 70	+ 65	− 3	+ 15	− 7	− 1	+ 6	− 6	− 2	− 8.8	+ 22.2
642	0.847	+ 23	+ 27	+ 13	− 92	+ 14	+ 17	0	+ 5	+ 3	− 4	− 30	+ 8	− 9.7	+ 23.0
643	0.527	+ 39	+ 26	+ 70	− 62	+ 53	+ 40	+ 8	+ 5	+ 22	+ 8	+ 12	+ 16	− 10.6	+ 23.8
644	0.475	+ 3	− 6	− 1	− 101	+ 84	+ 70	− 9	− 10	− 4	− 6	+ 3	+ 27	− 12.6	+ 24.1

No.	B. D. or Br.—St.	Mag.	1900.0 α	1900.0 δ	α μ_1	α μ_2	α μ_3	δ μ_1	δ μ_2	δ μ_3	μ''_α	μ''_δ
578	735	11.5	2h 14m 3s	56° 32'.5	− 0".018	− 0".014	+ 0".007	+ 0".015	− 0".018	+ 0".010	− 0".004	+ 0".004
578*			13 34	31.1		+ 21			− 15		+ 21	− 15
579	1349	13.4	13 36	31.0	− 39	− 8	− 9‡	+ 2	+ 3	+ 18‡	− 16	− 10
580	701a	13.2	13 38	31.0	+ 4	+ 6	+ 2	+ 40	− 2	+ 7	+ 3	+ 13
581	721	12.3	13 50	28.8	− 10	+ 4	0	+ 13	+ 19	− 2	− 1	+ 7
582	56°.550 †	9.3	13 51	28.0	− 16	+ 7	+ 24	− 5	− 1	− 8	+ 10	− 5
583	1372	13.6	14 4	25.6	− 15	− 16	+ 17	+ 16	+ 16	+ 6	+ 1	+ 11
584	736a	12.5	14 4	24.6	+ 6	+ 1	+ 1	+ 8	− 5	+ 18	+ 2	+ 10
585	56°.555 †	8.5	14 8	24.4	− 7	+ 4	+ 4	− 2	− 23	− 2	+ 1	+ 7
586	56°.556 †	9.6	14 10	23.7	− 18	+ 13	+ 16	− 9	− 16	+ 23	+ 7	+ 5
587	56°.554 †	9.4	14 8	21.4	− 1	− 4	+ 20	− 22	− 26	+ 12	+ 9	− 6
588	1374	11.0	14 4	17.6	− 5	− 20	+ 12	− 17	− 15	+ 20	0	+ 2
589	722	12.2	13 51	9.2	+ 6	+ 14	+ 25	− 22	+ 2	+ 8	+ 17	− 1
590	717	12.9	13 48	9.1	− 7	+ 27	+ 12	− 23	− 9‡	+ 25	+ 11	+ 4
591	723a	13.2	13 52	6.6	+ 20	− 13	+ 27	+ 10	+ 26	+ 41	+ 15	+ 29
592	714	13.7	13 46	55° 58'.1	− 14	+ 7	+ 17	− 6	+ 20‡	+ 15‡	+ 7	+ 11
593	55°.589 †	10.7	13 55	55.7	− 8	− 2	+ 14	− 16	− 10	− 3‡	+ 4	− 8
594	740	13.0	14 5	54.8	− 43‡	− 19	+ 20	− 7	− 20‡	− 7‡	− 5	− 10
595		12.5	13 55	49.0	− 17‡	− 23‡	+ 30‡	+ 15‡	+ 17‡	+ 3‡	+ 5	+ 9
596		12.5	14 6	48.0	− 18	+ 2	+ 23‡	+ 23‡	− 16	+ 8‡	+ 7	+ 6
	$\alpha = 2h\ 12m\ 55s$ to $\alpha = 2h\ 13m\ 35s.$											
599		11.6	2h 13m 2s	57° 34'.2	+ 16	− 15	− 3	+ 21‡	− 12	− 30‡	− 1	− 13
600	57°.542 †	9.4	13 22	32.1	− 38	− 47	− 39	+ 10	− 53	− 63	− 41	− 42
601	651	10.5	13 8	28.7	0	− 16	− 12	+ 24	− 4	+ 13	− 10	+ 11
602	677	11.7	13 23	26.6	− 36	− 16	− 6	0	− 9	+ 39	− 16	+ 17
603	634	13.6	12 55	22.4	− 3	− 5	− 12	− 10	− 13	− 7	− 8	− 9
604	686	12.5	13 30	18.1			− 9		+ 15	+ 5	− 9	+ 8
605	683	12.4	13 29	17.8	+ 3	− 19	− 8	− 7	+ 44	− 9	− 8	+ 14
606	646	13.2	13 6	13.5	− 38‡	− 12	− 11	− 23	+ 2	+ 19	− 18	+ 4
607	638	12.4	12 59	12.3	+ 21	+ 32	+ 10	− 1	+ 10	− 11	− 18	− 3
608	636	13.2	12 57	8.8	+ 3	+ 36‡	+ 12	− 24	− 54	+ 4	+ 16	− 17
609	644	11.9	13 4	8.2	− 8	+ 2	− 9	+ 4	+ 9	− 18	− 6	+ 12
610	679	12.7	13 27	5.9	− 3	+ 5	− 23	+ 21	+ 11	+ 7	− 11	+ 11
612	56°.544 †	10.4	13 6	0.3	− 6	− 11	− 1	− 2	− 26	+ 2	− 5	− 6
613	690	12.2	13 32	56° 59'.1	+ 7	+ 7	− 5	+ 6	+ 5	+ 10	+ 1	+ 8
615	672	13.1	13 20	54.7	− 11	+ 13	+ 2	− 18	− 11	− 10	+ 1	− 12
616	685	12.4	13 30	51.1	− 16	− 7	− 6	+ 4	− 9	− 14	− 9	− 8
617	678	12.8	13 23	47.7	− 4	− 11	+ 2	− 2	+ 4	+ 10	− 3	+ 5
618	1341	13.3	13 13	45.5	− 11	+ 3	+ 9	+ 13	+ 4	+ 8	+ 2	+ 8
619	688	12.3	13 32	45.3	+ 13	+ 18	+ 30	+ 11	− 3	+ 3	+ 23	+ 3
621	639	11.0	13 0	43.7	+ 1	+ 4	+ 6	+ 4	− 3	+ 3	+ 2	− 1
623	663	11.2	13 14	42.4	− 2	+ 1	+ 7	− 12	+ 8	− 5	+ 3	− 3
624	673	12.7	13 21	41.5	+ 17	+ 6	+ 12	+ 26	+ 9	+ 9	+ 12	+ 13
625	664	13.9	13 16	40.6	+ 3	− 1	+ 6	+ 28	− 6	+ 11	+ 3	+ 11
626	642	11.6	13 4	39.8	− 18	+ 10	+ 6	0	+ 30	0	+ 1	+ 7
627	686a	12.4	13 30	39.5	− 8	+ 15	+ 2	+ 18	+ 6	+ 7	+ 3	+ 9
628	691	12.8	13 33	39.3	− 5	+ 5	+ 3	+ 15	− 11	+ 12	+ 1	+ 7
629	656	11.9	13 10	39.1	+ 4	+ 10	− 9	+ 19	+ 10	+ 24	− 1	+ 19
630	56°.545 †	9.1	13 13	38.3	− 14	− 7	− 9	− 6	− 7	0	− 10	− 3
631	682	13.2	13 29	36.2	− 9	+ 7	+ 4	+ 23	− 5	+ 15	+ 1	+ 12
632	640	11.8	13 2	35.7	− 15	− 6	− 1	+ 24	+ 2	+ 21	− 6	+ 17
633	649	13.2	13 7	34.6	− 4‡	− 33	+ 5	+ 10	+ 6	− 3	− 7	+ 2
634	689	12.1	13 32	32.9	− 9	− 21	− 1	+ 1	+ 14	+ 20	− 8	+ 7
635	56°.547 †	10.4	13 27	32.0	− 29	− 6	+ 2	+ 1	− 7	+ 24	− 8	+ 10
636	657a	12.8	13 13	26.4	− 6	− 4	+ 1	− 3	+ 8	+ 12	− 2	+ 3
637	694	13.4	13 34	24.6	+ 3	− 2	+ 7	0	+ 4	+ 20	+ 4	+ 9
639	669	12.4	13 19	19.1	− 4	− 6	+ 15	− 1	− 4	+ 19	+ 5	+ 8
640	647	13.2	13 6	17.5	+ 17	− 9	− 1‡	− 2	+ 4	+ 7	+ 2	+ 2
642	56°.546 †	10.8	13 13	16.8	− 2	+ 3	+ 2	− 12	+ 28	+ 14	+ 2	− 3
643	671	13.2	13 19	16.0	+ 10	+ 3	+ 21	0	+ 10	+ 22	+ 14	+ 8
644	695	13.6	13 34	15.7	− 7‡	− 12	− 5	− 14	+ 5‡	+ 33	− 7	+ 14

Reduction to absolute P.M.: $\Delta \mu''_\alpha = -0''.006$; $\Delta \mu''_\delta = +0''.007$.

No.	diameter	α			δ			α			δ			x	γ
		M₁	M₂	M₃	M₁	M₂	M₃	m₁	m₂	m₃	m₁	m₂	m₃		
645	0r.460	+ 0r.033	+ 0r.023	+ 0r.086	− 0r.109	+ 0r.046	+ 0r.006	+ 0″.006	+ 0″.003	+ 0″.029	− 0″.008	− 0″.017	+ 0″.004	− 10ᵖ.3	+ 25ᵖ.4
646	0.682	+ 45	+ 59	+ 11	− 95	+ 67	− 1	+ 13	+ 19	+ 2	+ 2	− 8	+ 1	− 10.2	+ 27.6
647	1.044	+ 45	+ 86	+ 102	− 157	+ 34	+ 1	+ 16	+ 31	+ 37	− 20	− 27	0	− 8.3	+ 32.0
648	0.528	+ 77	+ 2	+ 54	− 99	+ 27	+ 55	+ 32	− 9	+ 17	+ 8	− 30	+ 19	− 10.5	+ 32.3
649	0.536	+ 30	+ 49	+ 75	− 168	+ 79	+ 65	+ 11	+ 13	+ 22	− 21	− 5	+ 21	− 12.3	+ 33.8
650	0.596	− 25	+ 58	+ 86	− 123	+ 57	− 5	− 16	+ 17	+ 29	+ 2	− 17	− 5	− 9.1	+ 34.8
651	0.482	+ 3	− 3	+ 33	− 155	+ 51	− 27	− 1	− 13	+ 9	− 11	− 20	− 13	− 10.6	+ 35.7
652	0.851	+ 4	+ 51	+ 58	− 228	+ 48	− 12	0	+ 13	+ 18	− 47	− 22	− 7	− 9.8	+ 35.7
653	0.517	+ 100	+ 129	+ 161	− 276	− 38	− 158	+ 49	+ 50	+ 55	− 63	− 67	− 61	− 9.0	+ 39.6
654	0.538	− 24	+ 96	+ 58	− 142	+ 98	+ 40	− 7	+ 32	+ 18	+ 14	− 3	+ 2	− 9.8	+ 45.2
655	0.518	− 42	+ 28	+ 122	− 139	+ 136	+ 119	− 14	+ 2	+ 40	+ 19	+ 14	+ 27	− 9.8	+ 46.9
656	1.224	+ 65	− 2	+ 86	− 258	+ 69	+ 6	+ 40	+ 16	+ 24	− 36	− 18	− 14	− 12.9	+ 47.8
658	0.513	0	+ 32	+ 66	− 143	+ 130	+ 64	+ 12	− 1	+ 20	+ 29	+ 8	+ 1	− 10.1	+ 52.1
660	0.542	0	+ 92	+ 125	− 152	+ 157	+ 117	+ 13	+ 26	+ 42	+ 30	+ 20	+ 16	− 9.3	+ 54.1
661	0.583	− 64	+ 95	+ 112	− 208	+ 101	+ 69	− 16	+ 29	+ 32	+ 10	− 8	− 5	− 13.0⁵	+ 57.2
662	0.852	− 7	+ 64	+ 126	− 270	+ 105	− 10	+ 13	+ 13	+ 37	− 18	− 7	− 34	− 12.8	+ 57.7
		α = 2h 12m 17s	α = 2h 12m 58s.												
663	0.576	+ 92	− 107	− 71	− 16	− 59	− 309	− 2	− 37	− 20	− 2	− 7	− 41	− 5.5	− 58.5
664	0.658	+ 136	− 86	− 33	+ 25	+ 17	+ 356	+ 17	− 27	− 2	+ 22	+ 26	− 15	− 1.9	− 55.8
667	0.545	+ 95	− 27	− 9	+ 31	− 31	+ 460	− 2	− 0	+ 6	+ 21	+ 2	+ 39	− 2.3	− 50.9
668	0.649	+ 73	− 53	− 23	+ 8	− 56	+ 403	− 11	− 13	− 2	+ 8	− 16	+ 31	− 3.7	− 47.6
669	0.783	+ 83	− 34	− 15	+ 42	− 22	+ 368	− 4	− 5	− 1	+ 23	+ 1	+ 23	− 6.6	− 45.9
670	0.641	+ 31	− 58	− 31	+ 16	+ 7	+ 367	− 29	− 18	− 5	+ 9	+ 11	+ 36	− 5.2	− 41.8
671	0.663	+ 193	+ 39	+ 85	− 10	+ 81	+ 188	+ 52	+ 28	+ 34	− 5	− 35	− 15	− 6.5	− 37.7
672	0.672	+ 69	− 23	+ 9	− 28	− 33	+ 189	− 11	− 1	+ 10	− 13	− 13	− 12	− 3.6	− 37.0
673	0.609	+ 90	− 44	− 105	+ 13	− 33	+ 253	0	− 12	− 29	+ 7	− 15	+ 13	− 3.3	− 36.2
674	1.218	+ 106	+ 17	+ 43	+ 17	+ 80	+ 130	+ 9	+ 17	+ 21	+ 8	− 39	− 22	− 4.5	− 33.3
675	0.918	+ 40	− 36	− 60	+ 2	− 39	+ 145	− 21	− 10	− 15	0	− 21	− 8	− 5.2	− 29.6
676	0.551	+ 34	− 39	− 62	+ 11	− 23	+ 190	− 25	− 12	− 14	+ 5	− 16	+ 11	− 3.1	− 27.8
677	0.542	+ 68	+ 13	− 44	+ 38	− 19	+ 174	− 6	+ 13	− 12	+ 18	− 13	+ 8	− 6.4	− 26.7
678	0.448	+ 56	− 19	− 65	+ 36	+ 35	+ 193	− 12	− 4	− 15	+ 19	+ 8	+ 24	− 2.8	− 23.2
679	1.046	+ 18	+ 17	− 44	0	+ 42	+ 121	− 30	− 3	− 9	+ 1	− 28	− 1	− 4.6	− 23.0
680	0.754	+ 35	− 45	− 44	+ 29	0	+ 121	− 21	− 17	− 9	+ 14	− 8	+ 1	− 5.1	− 21.7
682	0.491	+ 124	− 1	− 110	− 9	+ 13	+ 151	+ 22	+ 4	− 31	− 2	− 4	+ 15	− 3.5	− 19.9
683	0.541	+ 84	− 16	+ 29	+ 43	− 13	+ 129	+ 4	− 3	+ 16	+ 23	− 18	+ 12	− 4.5	− 17.8
684	0.572	+ 42	− 13	− 9	+ 10	+ 40	− 26	− 13	− 3	0	+ 9	+ 6	− 35	− 7.1	− 13.0
685	1.472	+ 16	+ 21	− 1	16	− 8	− 54	− 25	+ 13	+ 3	− 3	− 18	− 42	− 6.8	− 11.9
686	0.505	+ 67	+ 9	− 47		+ 58	+ 46	0	+ 6	− 10		+ 10	− 2	− 4.5	− 9.2
687	0.851	+ 65	− 20	− 40	+ 45	− 4	+ 13	− 1	− 8	− 8	+ 28	− 20	− 14	− 4.5	− 8.9⁵
688	0.530	+ 41	− 20	+ 104		+ 39	+ 97	− 13	− 8	+ 43		+ 1	+ 15	− 4.5	− 8.9
689	0.551	+ 41	+ 44	+ 5	+ 42	+ 38	+ 28	− 12	+ 22	+ 8	+ 28	0	− 8	− 3.8	− 7.9
690	0.514	+ 22	+ 18	− 19	+ 48	+ 68	+ 90	− 20	+ 10	− 3	+ 31	+ 15	+ 14	− 6.4	− 8.0
691	0.451	+ 72	+ 7	− 19	+ 1	+ 35	− 7	+ 3	+ 4	+ 1	+ 8	− 3	− 14	− 2.9	− 6.9
692	0.630	+ 38	+ 21	+ 42	+ 11	+ 48	+ 17	+ 13	+ 11	− 7	+ 14	+ 3	− 9	− 3.2	− 6.6
693	0.642	+ 47	+ 30	− 39	+ 38	+ 88	+ 40	− 8	+ 16	− 9	+ 26	+ 24	− 1	− 6.3	− 6.4
694	0.664	+ 50	+ 35	+ 22	+ 8	+ 58	+ 46	− 7	+ 18	+ 14	+ 13	+ 8	+ 1	− 3.7	− 6.3
695	0.598	+ 19	+ 13	− 36	+ 28	+ 54	+ 59	− 22	+ 7	− 5	+ 22	+ 5	+ 6	− 3.0	− 6.1
696	0.692	+ 32	− 31	− 5	+ 27	+ 7	+ 61	− 15	− 15	+ 6	+ 23	− 18	+ 9	− 3.2	− 4.1
697	0.510	+ 55	+ 32	− 21	+ 38	+ 46	+ 46	− 3	+ 16	− 3	+ 28	+ 2	+ 4	− 6.4	− 3.8
699	0.672	+ 53	+ 42	− 17	+ 18	+ 41	+ 1	+ 4	+ 19	+ 2	+ 20	− 3	− 10	− 3.3	− 2.5
700	0.573	+ 36	+ 31	− 10	+ 10	+ 69	+ 20	− 12	+ 14	+ 3	+ 7	+ 10	− 3	− 3.7	− 2.2
701	0.654	+ 7	− 5	+ 13	− 14	+ 28	+ 31	− 26	− 3	+ 12	+ 5	− 10	+ 1	− 3.3	− 1.9
702	0.466	+ 81	− 29	− 20	+ 72	+ 37	+ 39	+ 10	− 15	+ 1	+ 48	− 6	+ 5	− 3.3	− 1.3
703	0.508	+ 42	+ 82	+ 2	+ 59	+ 78	+ 58	− 7	+ 39	+ 3	+ 41	+ 16	+ 11	− 7.1	− 1.2
704	1.100	+ 48	+ 4	− 8	+ 10	− 7	+ 52	+ 6	+ 1	+ 5	+ 18	+ 28	+ 9	− 3.1	− 0.9
705	0.777	+ 34	− 35	+ 18	+ 25	+ 62	+ 39	− 12	− 19	+ 14	+ 26	+ 5	+ 6	− 3.3	+ 0.2
706	0.816	+ 4	− 18	− 6	+ 7	+ 9	+ 66	− 26	− 11	+ 6	+ 18	− 30	+ 16	− 2.9	+ 0.5
707	0.765	− 9	+ 43	− 15	+ 35	+ 23	+ 38	− 31	+ 19	− 1	+ 31	+ 13	+ 7	− 5.9	+ 0.7
708	0.576	+ 52	+ 38	− 73	+ 5	+ 47	+ 63	− 1	+ 17	− 20	+ 17	+ 2	+ 15	− 4.6	+ 1.0
709	0.996	− 2	+ 30	+ 4	+ 29	+ 27	+ 10	− 27	+ 17	+ 7	+ 29	− 12	− 2	− 4.8	+ 1.8
710	1.071	+ 25	+ 2	− 27	+ 3	+ 2	+ 18	+ 14	− 2	− 2	+ 18	− 26	+ 1	− 3.0	+ 2.7

No.	B. D. or Br.—St.	Mag.	1900.0 α	1900.0 δ	α μ_1	α μ_2	α μ_3	δ μ_1	δ μ_2	δ μ_3	μ''_α	μ''_δ
645	667	13.8	2h 13m 17s	56° 14'.3	+0".008‡	+0".001	+0".028	−0".016	−0".015	+0".010	+0".016	−0".003
646	665	11.9	13 16	12.2	+14	+17	+1	−7	−6	+8	+8	+1
647	55°.581 †	9.8	13 3	7.8	+17	+30	+37	−29	−25	+7	+30	+10
648	1343	13.2	13 18	7.4	+33	−11	+16	−1	−28	+26	+14	+6
649	1345	13.1	13 30	6.1	+11	+11	+21	−30	−3	+29	+16	+6
650	653	12.6	13 8	5.1	−16	+16	+28	−7	+15	+3	+14	−4
651	670	13.6	13 19	4.2	−1	−14	+8	−20‡	−19‡	−5	0	−12
652	55°.582 †	10.8	13 13	4.2	0	+12	+17	−56	−21	+1	+12	−19
653	652	13.3	13 7	0.3	+48	+49	+54	−73	−66	−52	+51	−61
654	659	13.1	13 13	55° 54'.7	−9	+31	+17	+4	−2	+12	+14	+6
655	661	13.2	13 13	53.1	−17	−3	+39	+9	+15	+38‡	+14	+25
656	55°.587 †	9.0	13 35	52.2	+37	−18	+23	−46	+17	−3	+16	−17
658	1968	13.3	13 15	47.9	+8	−2	+19	+18‡	+8‡	+13‡	+11	+13
660		13.0	13 9	45.9	+9	+25‡	+41‡	+19‡	+20	+29‡	+29	+24
661		12.7	13 35	42.8	−21‡	+28	+30‡	−1‡	+8‡	+9‡	+17	+2
662	55°.585	10.8	13 33	42.4	+8	+12	+35‡	−29‡	+7	−19‡	+22	−18

$\alpha = $ 2h 12m 17s to $\alpha = $ 2h 12m 58s.

No.	B. D. or Br.—St.	Mag.	1900.0 α	1900.0 δ	α μ_1	α μ_2	α μ_3	δ μ_1	δ μ_2	δ μ_3	μ''_α	μ''_δ
663		12.7	2h 12m 44s	57° 37'.8	−7‡	−37	−22	−7‡	−1	−32‡	−22	−18
664		12.0	12 17	35.2	+13	−28	−4	+13‡	−31	+6‡	+6	+8
667	532	13.0	12 21	30.2	−4	−1	+4	+12	+3‡	+47	+1	+27
668	564	12.1	12 31	26.8	−13	−14	−4	0	−11	+38	−9	+16
669	628	11.2	12 52	25.1	−5	−6	−3	+15	+6	+30	−4	+20
670	598	12.2	12 41	21.1	−29	−19	−6	+1	+16	+42	−15	+25
671	627	12.0	12 51	17.0	+52	+27	+33	−13	−30	+10	+36	−16
672	562	11.9	12 30	16.4	−10	−2	+9	−21	−8	−7	+1	−11
673	557	12.5	12 28	15.6	+1	−13	−30	−1	−10	+18	−18	+6
674	57°.541 †	9.0	12 36	12.7	+10	+16	+20	0	−34	−17	+16	−17
675	56°.539 †	10.4	12 41	9.0	−19	−11	−16	−8	−16	−4	−15	−8
676	550	12.9	12 26	7.2	−23	−13	−15	−3	−11	+15	−16	+4
677	623	13.0	12 50	6.1	−4‡	+12‡	−13	+11	−8‡	+12	−4	+7
678	537	13.9	12 24	2.8	−9	−5	−16	+11	+13	+28	−11	+20
679	56°.536 †	9.8	12 37	2.4	−27	−4	−10	−7	−23	+3	−13	−6
680	593	11.3	12 41	1.1	−18	−18	−10	+6	−3	+5	−14	+3
682	559	13.5	12 29	56° 59'.4	+25	+3	−32	−10	0	+18	−9	+6
683	582	13.0	12 37	57.2	+7	−4	+15	+15	−14	+15	+8	+8
684	635	12.8	12 55	52.5	−10	−4	−1	+2	+10	−32	−4	−13
685	56°.543 †	8.1	12 53	51.4	−22	+12	+2	−10	−14	−39	−2	−25
686	577	13.4	12 36	48.8	+3	+5	−10		+14	+1	−3	+5
687	56°.537 †	10.8	12 36	48.5	+2	−9	+8	+20	−16	−11	−6	−4
688		13.1	12 35	48.4	−10‡	−9‡	+43‡		+5‡	+18‡	+17	+14
689	566	12.9	12 31	47.4	−9	+21	+8	+20	+4	−5	+7	+3
690	621	13.3	12 50	47.5	−17‡	+9	−3	+23	+19	+17	−3	+19
691	540	13.9	12 24	46.5	+6	+3	+1	0	+1	−11	+3	−5
692	552	12.3	12 26	46.1	−10	+10	−7	+6	+7	−6	−3	0
693	617	12.2	12 49	46.1	−5	+15	−9	+18	+28	+2	−2	+12
694	565	12.0	12 30	45.9	−4	+17	+14	+5	+12	+4	+10	+6
695	548	12.5	12 25	45.7	−19	+6	−5	+14	+9	+9	−6	+10
696	553	11.8	12 27	43.7	−11	−16	+6	+15	−14	+12	−4	+6
697	620	13.3	12 50	43.4	+1	+15	−3	+20	+6	+7	+2	+10
699	555a	11.9	12 27	42.1	0	+18	+2	+12	+1	−7	+5	0
700	563	12.8	12 30	41.9	−9	+13	+3	−1	+14	0	+2	+3
701	555	12.1	12 27	41.6	−22	−4	+12	−3	−7	+4	0	0
702	556	13.7	12 27	41.0	+13‡	−16	+1	+40	−3	+8	0	+13
703	632	13.3	12 54	40.9	−4	+37	+3	+33	+20	+14	+10	+20
704	56°.535 †	9.5	12 26	40.6	−3	0	+5	+10	−25	+12	+2	+2
705	554	11.2	12 27	39.4	−9	−20	+14	+18	+8	+9	0	+11
706	56°.533 †	11.0	12 24	39.2	−23	−12	+6	+10	−27	+19	−6	+5
707	610	11.3	12 46	39.0	−28	+18	−1‡	+23	+10	+10‡	−3	+8
708	580	12.7	12 36	38.7	+2	+16	−20	+9	+1	+18	−6	+11
709	56°.538 †	10.0	12 38	37.8	−24	+18	+7	+21	−9	+1	−7	+3
710	56°.534 †	9.6	12 25	37.0	−11	−3	−2	+10	−23	+4	−5	−1

Reduction to absolute P.M.: $\Delta\mu''_\alpha = -0".006$; $\Delta\mu''_\delta = +0".007$.

No.	diameter	α			δ			α			δ			x	γ
		M_1	M_2	M_3	M_1	M_2	M_3	m_1	m_2	m_3	m_1	m_2	m_3		
711	$0^r.517$	$+0^r.019$	$+0^r.031$	$-0^r.014$	$+0^r.037$	$+0^r.045$	$+0^r.028$	$-0''.017$	$+0''.013$	$+0''.001$	$+0''.034$	$-0''.004$	$+0''.005$	$4^p.2$	$+3^p.1$
712	0.624	+ 49	− 15	− 29	+ 13	+ 55	+ 21	− 2	− 10	− 3	+ 23	0	+ 3	− 5.0	+ 3.6
713	0.557	+ 56	+ 29	− 31	+ 43	+ 37	+ 16	+ 2	+ 11	− 5	+ 38	− 9	+ 2	− 4.6	+ 3.7
714	0.547	+ 78	− 17	− 40	+ 19	+ 27	− 2	+ 13	− 5	− 8	+ 8	− 14	− 4	− 4.5	+ 3.9
715	0.672	+ 59	− 10	− 53	− 7	+ 16	+ 26	+ 5	− 8	− 14	+ 16	− 20	+ 7	− 5.6	+ 6.1
716	0.841	+ 5	+ 16	− 2	− 18	+ 35	− 19	− 21	+ 4	+ 3	+ 10	− 11	− 9	− 5.9	+ 6.3
717	0.624	+ 80	+ 30	+ 30	+ 17	+ 34	+ 11	+ 15	+ 11	+ 18	+ 29	− 13	+ 2	− 2.9	+ 6.7
718	0.746	+ 16	+ 29	+ 16	+ 16	+ 55	+ 58	− 15	+ 11	+ 8	+ 28	− 1	+ 19	− 7.4	+ 6.8
719	0.560	+ 53	+ 26	− 13	+ 15	+ 66	+ 15	+ 2	− 9	+ 0	+ 27	+ 3	+ 4	− 6.0	+ 6.9
721	0.840	+ 52	+ 46	+ 47	+ 36	+ 43	− 27	+ 1	+ 19	+ 25	+ 38	− 9	− 11	− 2.6	+ 7.1
722	0.704	+ 26	− 2	− 24	− 4	+ 6	− 38	− 11	− 3	− 3	+ 18	− 26	− 15	− 5.6	+ 7.1
723	0.586	+ 13	− 0	− 13	− 25	+ 56	− 19	− 18	− 4	− 3	+ 8	− 2	+ 5	− 2.9	+ 7.3
724	0.581	+ 132	+ 130	− 67	− 36	+ 6	− 49	+ 41	+ 60	+ 27	+ 2	− 25	− 18	− 6.4	+ 7.3
725	0.601	+ 72	+ 65	+ 4	− 27	+ 62	+ 4	+ 12	+ 28	+ 8	+ 8	− 0	− 0	− 4.2	+ 7.7
726	0.881	+ 8	+ 32	− 13	+ 9	+ 6	− 21	− 19	+ 11	+ 1	+ 27	− 27	+ 7	− 5.3	+ 8.7
727	0.491	+ 76	− 6	+ 26	− 1	+ 70	− 39	+ 15	− 7	+ 13	+ 22	+ 4	− 14	− 6.2	+ 9.2
728	0.504	+ 65	+ 90	− 30	− 6	+ 106	+ 2	+ 10	+ 39	− 5	+ 21	+ 20	− 0	− 5.3	+ 9.9
729	0.612	− 2	+ 18	+ 40	− 38	+ 48	+ 20	− 21	+ 3	+ 19	− 7	− 9	+ 8	− 5.6	+ 12.2
730	0.627	+ 35	+ 37	− 30	+ 25	+ 60	− 5	− 3	+ 12	− 3	+ 39	− 4	− 0	− 2.9	+ 12.4
731	0.558	+ 38	+ 33	− 78	− 17	+ 30	+ 19	− 1	+ 10	− 22	+ 20	− 18	+ 8	− 4.5	+ 13.2
732	0.569	+ 9	+ 12	− 11	− 27	+ 62	− 27	− 16	+ 0	+ 2	+ 15	− 3	− 8	− 4.1	+ 13.8
733	0.776	+ 36	− 3	− 25	− 15	+ 68	+ 22	− 2	− 8	+ 1	+ 21	− 1	+ 9	− 2.8	+ 14.2
734	0.631	+ 7	+ 42	− 4	− 40	+ 55	− 43	+ 15	+ 14	+ 5	+ 12	− 9	− 13	− 3.6	+ 15.9
735	0.844	+ 19	+ 7	+ 1	+ 34	+ 5	− 37	− 8	+ 4	+ 6	+ 16	− 33	− 11	− 5.2	+ 16.6
736	0.587	− 1	+ 52	− 28	− 85	+ 40	− 30	− 18	+ 19	− 6	− 9	− 16	− 8	− 5.7	+ 16.9
737	0.789	+ 45	+ 3	− 28	− 62	+ 41	+ 9	+ 6	+ 6	− 4	+ 3	− 16	+ 6	− 4.8	+ 18.2
738	0.576	+ 22	+ 54	+ 12	− 48	+ 73	+ 17	− 5	+ 19	+ 9	+ 12	− 1	+ 8	− 5.1	+ 18.6
739	0.703	+ 1	− 3	− 27	− 53	+ 21	+ 27	− 14	− 10	− 2	+ 12	− 29	− 7	− 2.9	+ 20.7
740	0.783	+ 46	+ 23	+ 18	− 113	+ 48	− 14	+ 10	+ 1	+ 12	− 12	− 17	− 2	− 4.8	+ 23.7
741	0.497	+ 27	− 4	− 21	− 68	+ 67	+ 4	+ 1	− 11	− 4	+ 10	− 7	+ 4	− 6.0	+ 23.7
742	0.975	− 5	+ 49	− 4	− 105	+ 29	− 22	− 14	+ 14	+ 4	− 8	− 26	− 5	− 5.3	+ 24.5
743	0.839	+ 20	+ 30	− 27	− 99	+ 50	− 5	− 1	+ 5	− 6	− 4	− 16	+ 1	− 5.8	+ 25.1
745	0.595	+ 32	− 3	+ 6	− 107	+ 64	+ 25	+ 5	− 11	+ 4	− 5	− 9	+ 10	− 6.8	+ 26.6
746	0.549	+ 10	+ 11	− 61	− 150	+ 114	− 1	− 2	− 7	− 16	− 19	+ 11	− 0	− 4.5	+ 30.9
747	0.742	− 5	+ 27	− 40	− 121	+ 76	− 9	− 7	0	− 8	0	− 9	− 5	− 3.5	+ 33.4
748	0.662	− 3	+ 1	+ 31	− 141	+ 107	− 72	− 4	+ 13	+ 14	− 5	+ 5	− 28	− 6.0	+ 35.8
749	0.574	− 30	+ 30	+ 34	− 130	+ 85	− 19	− 15	+ 0	+ 15	+ 6	− 7	− 12	− 5.7	+ 39.0
750	0.663	− 20	+ 45	+ 27	− 169	+ 58	− 39	− 7	+ 6	+ 12	+ 5	− 22	− 22	− 6.4	+ 42.5
751	0.777	− 83	+ 4	− 60	− 142	+ 113	+ 34	− 37	− 14	− 19	+ 11	+ 4	+ 1	− 6.6	+ 43.9
752	0.745	+ 19	+ 110	+ 91	− 190	+ 113	− 33	+ 13	+ 37	+ 36	− 13	+ 3	− 23	− 4.8	+ 44.3
753	0.999	+ 12	+ 70	+ 66	− 264	+ 46	− 47	+ 11	+ 18	+ 26	− 46	− 30	− 28	− 6.3	+ 45.2
754	0.694	− 66	− 6	− 51	− 221	+ 65	− 88	− 25	− 21	− 14	− 20	− 22	− 45	− 5.4	+ 47.5
755	0.903	+ 8	+ 36	+ 59	− 214	+ 107	− 39	+ 12	− 1	+ 25	− 14	− 2	− 29	− 4.8	+ 48.4
756	0.955	+ 5	+ 57	+ 104	− 261	+ 55	− 19	+ 14	+ 9	+ 37	− 28	− 29	− 28	− 7.3	+ 52.0
757	0.896	− 19	+ 79	+ 43	− 258	+ 89	− 16	+ 3	+ 18	− 19	− 24	− 14	− 29	− 5.0	+ 53.4
758	0.845	− 10	+ 61	+ 102	− 242	+ 98	+ 1	+ 8	+ 11	+ 36	− 15	− 9	− 24	− 7.8	+ 54.2
	$\alpha = 2^h\,11^m\,46^s$ to $\alpha = 2^h\,12^m\,25^s$.														
760	0.696					+ 35	+ 437					+ 39	− 14	0.1	− 63.3
761	0.612	+ 91	− 127	− 128	+ 16	− 4	+ 411	− 6	− 45	− 35	+ 22	+ 19	− 16	0.8	− 61.4
762	0.604	+ 117	− 81	− 100	+ 89	− 56	+ 479	+ 8	− 25	− 24	+ 52	− 14	+ 39	0.6	− 53.2
763	0.689	+ 142	− 65	+ 11	+ 48	− 28	+ 463	+ 19	− 17	+ 16	+ 32	− 1	+ 33	0.9	− 53.1
765	0.627	+ 88	− 55	− 52	− 4	− 5	+ 349	− 5	− 14	− 8	+ 2	+ 6	+ 14	0.5	− 47.0
766	0.580	+ 130	− 70	− 6	− 15	− 53	+ 196	+ 18	− 24	+ 9	− 6	− 25	− 10	0.3	− 36.8
768	0.932	+ 76	− 5	− 68	− 9	− 4	+ 174	+ 6	+ 9	− 9	− 4	− 10	+ 8	2.4	− 26.9
770	0.582		− 40	− 32		+ 6	+ 206		+ 14	+ 3		− 7	+ 26	1.9	− 24.3
772	0.628	+ 66	− 1	− 48	+ 61	+ 0	+ 160	− 7	+ 5	− 4	+ 32	− 12	+ 18	0.4	− 20.5
774	0.664	+ 131	+ 66	+ 19	− 35	− 17	+ 61	+ 25	+ 36	+ 20	− 14	− 22	− 12	0.8	− 18.2
775	0.781	+ 79	− 19	− 30	+ 35	+ 20	+ 143	0	− 5	+ 3	+ 20	− 5	+ 16	1.8	− 18.0
776	0.596	+ 89	− 34	− 48	+ 25	+ 26	+ 118	+ 6	− 13	− 7	+ 15	+ 0	+ 8	1.9	− 17.8
777	0.674	+ 80	− 20	− 50	+ 6	+ 38	+ 9	+ 3	− 8	− 3	+ 2	+ 0	+ 27	1.9	− 12.0
778	1.158	+ 47	+ 10	− 46	+ 18	− 55	+ 11	− 12	+ 6	− 1	+ 15	− 47	− 17	2.4	− 9.8

No.	B. D. or Br.—St.	Mag.	1900.0 α	δ	α μ_1	α μ_2	α μ_3	δ μ_1	δ μ_2	δ μ_3	μ''_α	μ''_δ
711	573	13.3	2h 12m 34s	56° 36'.6	− 0".014	+ 0".012	+ 0".001	+ 0".026	− 0".001	+ 0".008	0".000	+ 0".010
712	1334	12.3	12 39	36.1	+ 1	− 11	− 3	+ 15	+ 3	+ 6	− 4	+ 7
713	584	12.9	12 37	36.0	+ 5	+ 10	− 5	+ 30	− 6‡	+ 5	+ 1	+ 8
714	578	13.0	12 36	35.7	+ 16	+ 4	− 8	+ 0	− 11	− 1	+ 1	− 3
715	603	11.9	12 43	33.6	+ 8	− 9	− 14	+ 8	− 17	+ 10	− 7	+ 3
716	612	10.8	12 46	33.3	− 18	+ 3	+ 3	+ 2	− 8	− 6	− 2	− 4
717	543	12.3	12 24	33.1	+ 18	+ 10	+ 18	+ 21	− 10	+ 5	+ 16	+ 5
718	637	11.4	12 57	32.9	− 12	+ 9	+ 8	+ 20	+ 2	+ 23	+ 3	+ 17
719	614	12.9	12 47	32.8	+ 5	+ 8	+ 0	+ 19	+ 6	+ 8	+ 3	+ 10
721	56°.532 †	10.8	12 22	32.6	+ 4	+ 18	+ 25	+ 29	− 6	− 8	+ 18	+ 2
722	604	11.7	12 44	32.6	− 8	− 4	− 3	+ 10	− 23	− 11	− 4	− 9
723	539	12.6	12 24	32.4	− 15	− 5	+ 3	0	+ 1	+ 8	− 3	+ 4
724	622	12.7	12 50	32.3	+ 44	+ 59	+ 27	− 6	− 22	− 14	+ 39	− 14
725	572	12.5	12 34	32.1	+ 15	+ 27	+ 8	0	+ 3	+ 4	+ 14	+ 3
726	56°.540 †	10.6	12 41	31.1	− 16	+ 10	+ 1	+ 19	− 24	+ 11	− 1	+ 4
727	615	13.5	12 48	30.5	+ 18	− 8	+ 13	+ 14	+ 7	− 10	+ 9	0
728	600	13.4	12 41	29.7	+ 13‡	+ 38	− 5‡	+ 13	+ 23	+ 4	+ 10	+ 11
729	605	12.4	12 44	27.5	− 18	+ 2	+ 19	− 1	− 6	+ 12	+ 5	+ 4
730	542	12.3	12 24	27.3	0	+ 11	− 3	+ 30	− 1	+ 4	+ 1	+ 9
731	576	12.9	12 36	26.5	+ 2	+ 9	− 22	+ 11	− 15	+ 12	− 8	+ 5
732	569	12.8	12 33	26.0	− 13	− 1	+ 2	+ 6	0	− 4	− 2	0
733	538	11.2	12 24	25.6	+ 1	− 9	− 1	+ 12	+ 2	+ 13	− 2	+ 10
734	561	12.3	12 29	23.9	− 12	+ 13	+ 5	+ 3	− 6	− 9	+ 3	− 5
735	595	10.8	12 41	23.2	− 5	− 5	+ 6	+ 7	− 30	− 7	0	− 9
736	608	12.6	12 44	22.9	− 15	+ 18	− 6	− 18	− 13	− 4	− 2	− 10
737	586	11.1	12 38	21.5	+ 8	− 7	− 4‡	− 6	− 14	+ 11‡	− 2	0
738	592	12.7	12 40	21.2	− 3	+ 18	+ 9	+ 3	+ 1‡	+ 13	+ 8	+ 7
739	545	11.7	12 24	19.1	− 12	− 11	− 2	+ 3	− 27	− 2	+ 7	+ 7
740	587	11.2	12 38	16.1	+ 12	0	+ 12	− 21	− 15	+ 3	+ 9	− 7
741	613	13.4	12 46	16.1	+ 3	− 12	− 4	+ 1	− 5	+ 9	− 4	+ 3
742	56°.541 †	10.1	12 41	15.3	− 12	+ 13	+ 4	− 17	− 24	0	+ 2	− 10
743	56°.542 †	10.8	12 45	14.7	+ 1	+ 4	− 6	− 13	− 14	+ 7	− 2	− 3
745	629	12.6	12 52	13.2	+ 6‡	− 12	+ 4	− 14	− 7	+ 16	0	+ 3
746	575	13.0	12 35	9.0	− 1	− 8	− 16	− 29	+ 13‡	+ 7	− 10	0
747	558	11.4	12 28	6.4	− 7	− 1	− 8	− 10	− 8	+ 2	− 6	− 3
748	611	12.0	12 46	4.1	− 4	− 14	+ 14	− 15	+ 6	− 20	+ 2	− 12
749	607	12.7	12 44	0.9	− 16	− 1	+ 15	− 4	+ 6‡	− 4	+ 3	− 4
750	619	12.0	12 49	55° 57'.4	− 9	+ 5	+ 11	− 16	− 21‡	− 13	+ 4	− 16
751	55°.578 †	11.2	12 50	56.0	− 39	− 15‡	− 20	0	+ 5	+ 10‡	− 23	+ 6
752	585	11.4	12 37	55.7	+ 11	+ 36	+ 35	− 24‡	+ 4	− 13	+ 29	− 11
753	55°.577 †	10.0	12 48	54.8	+ 9	+ 17	+ 25	− 57	− 29	− 18	+ 19	− 30
754	602	11.8	12 42	52.5	− 28	− 22	− 15	− 31	− 21	− 35‡	− 20	− 30
755	55°.576 †	10.5	12 37	51.6	+ 9	− 2	+ 24	− 26	− 2	− 18‡	+ 14	− 16
756	55°.579	10.2	12 55	48.0	+ 10	+ 8	+ 36	− 40	− 29	− 16‡	+ 22	− 25
757		10.5	12 39	46.6	− 1	+ 18	+ 18	− 36	− 14	− 17‡	+ 13	− 21
758	55°.580	10.8	12 58	45.8	+ 3	+ 10	+ 35	− 27‡	− 9	− 11‡	+ 21	− 14

α = 2h 11m 46s to α = 2h 12m 25s.

No.	B. D. or Br.—St.	Mag.	1900.0 α	δ	α μ_1	α μ_2	α μ_3	δ μ_1	δ μ_2	δ μ_3	μ''_α	μ''_δ
760		11.8	2h 12m 4s	57° 42'.6					+ 44‡	− 3‡		+ 13
761		12.4	12 9	40.7	− 11	− 45	− 37	+ 12‡	+ 24‡	− 5‡	− 32	+ 6
762	488	12.5	12 8	32.5	+ 5	− 26	− 26	+ 43	+ 9	+ 48‡	− 18	+ 32
763	432	11.8	11 57	32.3	+ 17	− 18	+ 14	+ 23	+ 4	+ 42‡	+ 7	+ 28
765	485	12.3	12 7	26.3	− 6	− 15	− 9	− 7	+ 11	+ 21	− 10	+ 11
766	454	12.7	12 1	16.2	+ 19	− 25	+ 8	− 15	− 20	− 4	+ 2	− 11
768	56°.506 †	10.3	11 46	6.4	− 4	+ 8	− 10	− 13	+ 6	+ 12	− 4	+ 1
770	397	12.7	11 49	3.9		− 15	+ 2		− 3	+ 30	− 4	+ 19
772	453	12.3	12 0	56° 59'.9	− 4	+ 4	− 4	+ 24	− 8	+ 22	− 2	+ 15
774	438	12.0	11 58	57.7	+ 28	+ 35	+ 20	− 22	− 18	− 9	+ 26	− 14
775	56°.512 †	11.2	11 50	57.5	+ 3	− 6	+ 3	+ 12	− 1	+ 19	+ 1	+ 12
776	528	12.6	12 17	57.3	+ 9	− 14	− 7	+ 7	+ 4	+ 11	− 5	+ 8
777	401	11.9	11 49	51.6	+ 6	− 9	− 3	− 7	+ 4	− 24	− 2	− 13
778	56°.508 †	9.3	11 46	49.4	− 9	+ 5	− 1	+ 6	− 43	− 14	− 1	− 16

Reduction to absolute P.M.: $\Delta \mu''_\alpha = − 0".006$; $\Delta \mu''_\delta = + 0".007$.

No.	diameter	α			δ			α			δ			ϰ	γ
		M₁	M₂	M₃	M₁	M₂	M₃	m₁	m₂	m₃	m₁	m₂	m₃		
780	0ʳ.958	+ 0ʳ.048	− 0ʳ.003	− 0ʳ.026	+ 0ʳ.040	+ 0ʳ.016	+ 0ʳ.047	− 0″.009	0″.000	0″.000	+ 0″.027	− 0″.012	− 0″.001	− 1ᵖ.6	− 7ᵖ.7
781	0.693	+ 38	+ 8	− 40	+ 2	+ 20	+ 39	− 14	+ 5	− 4	+ 9	− 11	− 3	− 1.3	− 7.5
782	0.638	+ 21	− 29	− 57	+ 25	+ 47	+ 45	− 23	− 14	− 5	+ 20	+ 1	− 2	+ 2.5	− 7.7
783	0.935	− 13	− 27	− 17	+ 26	+ 40	+ 31	− 40	− 13	+ 8	+ 20	− 2	− 5	+ 2.3	− 7.1
784	0.577	+ 2	− 15	− 8	− 12	+ 29	− 24	− 32	− 7	+ 9	+ 2	− 7	− 24	0.0	− 6.7
785	0.681	− 35	+ 3	− 10	+ 47	+ 12	+ 2	− 50	+ 1	+ 10	+ 32	− 17	− 14	+ 1.7	− 5.9
786	0.542	+ 81	− 26	− 58	+ 46	+ 13	− 17	+ 7	− 13	− 6	+ 31	− 17	− 21	+ 1.8	− 5.9
787	0.453	− 17	− 18	− 73	+ 74	+ 65	− 2	− 41	− 9	− 12	+ 45	+ 8	+ 15	+ 1.8	− 5.6
788	0.735	+ 48	+ 12	− 30	+ 52	+ 59	− 1	− 9	+ 5	+ 3	+ 35	+ 5	− 14	+ 2.2	− 5.5
789	0.598	− 8	+ 5	+ 54	− 9	+ 66	+ 99	− 35	+ 2	+ 29	+ 5	+ 10	+ 21	− 1.2	− 5.2
791	0.750	+ 49	− 1	− 22	+ 8	+ 62	− 1	− 8	− 1	+ 6	+ 14	+ 6	− 14	+ 1.6	− 4.9
792	0.560	+ 22	− 21	− 36	0	+ 34	+ 29	− 21	− 11	+ 1	+ 10	− 7	− 2	+ 2.1	− 3.7
793	0.795	− 18	− 5	− 26	+ 57	+ 8	− 22	− 40	− 3	+ 1	+ 38	+ 19	− 20	− 1.5	− 3.7
794	0.758	+ 24	− 31	− 18	− 1	+ 45	− 11	− 20	− 16	+ 7	+ 10	− 2	+ 15	+ 1.2	− 3.4
795	0.849	+ 9	+ 12	− 13	− 2	+ 3	+ 38	− 26	+ 5	+ 8	+ 10	− 23	+ 2	+ 0.5	− 3.3
796	0.464	− 21	− 24	+ 10	+ 40	+ 12	− 21	− 41	− 13	+ 14	+ 30	− 18	− 18	− 0.4	− 3.0
797	0.591	+ 21	− 22	− 21	+ 18	+ 62	+ 41	− 20	− 12	+ 6	+ 20	+ 5	+ 3	+ 1.0	− 2.9
798	1.902	− 39	− 15	+ 11	+ 14	+ 31	+ 36	− 49	− 8	+ 14	+ 4	− 9	− 23	− 1.2	− 2.8
799	0.468	+ 66	+ 37	− 17	+ 3	+ 47	+ 26	+ 1	+ 17	+ 6	+ 9	− 1	− 2	− 0.1	− 2.8
801	0.645	+ 40	− 20	− 65	+ 41	+ 31	− 5	− 11	− 12	− 9	+ 32	− 11	− 11	+ 1.8	− 2.3
802	0.599	+ 8	− 16	− 29	+ 5	+ 65	− 11	− 26	− 10	+ 3	+ 14	+ 6	− 13	+ 1.4	− 2.3
803	0.617	+ 26	+ 15	+ 3	+ 58	+ 50	+ 17	− 17	+ 6	+ 11	+ 40	0	− 4	− 1.4	− 2.3
804	0.907	+ 7	− 36	− 1	− 3	+ 42	− 2	− 27	− 19	+ 13	+ 16	− 5	− 10	+ 1.5	− 2.1
805	0.791	+ 2	− 27	− 57	+ 43	+ 43	− 23	− 29	− 15	− 7	+ 33	− 4	− 17	+ 0.8	− 2.1
806	0.527	+ 33	− 49	− 38	+ 8	+ 65	+ 35	− 14	− 26	0	+ 16	+ 6	+ 3	+ 1.1	− 1.8⁵
807	0.432	− 16	− 13	− 44	− 1	+ 22	+ 23	− 38	− 8	− 2	+ 11	− 15	− 1	+ 0.7	− 1.8⁵
808	0.944	− 1	− 17	+ 12	+ 29	+ 29	+ 20	− 31	− 10	+ 9	+ 26	− 11	− 2	+ 1.3	− 1.8
809	0.860	− 5	− 17	− 4	+ 38	+ 13	− 24	− 32	− 10	+ 10	+ 30	− 18	− 18	− 0.3	− 1.8
810	0.756	+ 7	+ 4	− 31	− 9	+ 44	+ 6	− 27	0	+ 2	+ 7	− 4	− 7	+ 0.6	− 1.7⁵
811	0.764	+ 22	− 34	− 2	− 24	+ 43	+ 14	− 19	− 18	+ 11	0	− 4	− 5	− 0.2	− 1.5
812	0.712	+ 12	+ 1	− 88	+ 14	+ 39	+ 15	− 24	− 1	− 17	+ 20	− 7	− 4	+ 0.9	− 1.4⁵
813	0.620	+ 18	− 23	− 28	+ 55	+ 51	− 6	− 21	− 13	+ 3	+ 40	− 1	− 11	+ 0.7⁺	− 1.4
814	0.933	+ 11	− 18	− 37	+ 1	− 3	− 16	− 24	− 11	0	+ 13	− 27	− 15	+ 0.7⁻	− 1.3
815	0.976	− 49	− 21	− 16	+ 24	+ 9	+ 29	− 54	− 12	+ 8	+ 24	− 21	+ 1	+ 0.8	− 1.3
816	0.788	+ 38	+ 10	− 15	+ 22	+ 50	+ 41	− 11	+ 3	+ 9	+ 23	− 2	+ 5	+ 1.9⁵	− 1.3
817	0.498	0	− 49		+ 39	+ 60		− 30	− 26		+ 32	+ 3		+ 2.0	− 1.2
818	0.588	+ 51	− 19		+ 137	+ 59		− 5	− 11		+ 80	+ 2		+ 1.9	− 1.2
819	0.685	+ 44	+ 13	− 8	+ 25	+ 51	− 129	− 8	+ 4	+ 11	+ 25	− 1	− 54	+ 1.9	− 1.1⁵
820	0.720	+ 1	+ 4	+ 11	+ 25	+ 43	+ 43	− 29	0	+ 12	+ 25	− 3	+ 6	− 2.4	− 1.2
821	0.560	+ 25	− 14	− 40	+ 4	+ 69	+ 63	− 18	− 9	0	+ 15	+ 7	+ 13	+ 1.7	− 1.1
822	1.115	+ 3	− 27	− 36	− 12	+ 24	+ 48	− 28	− 15	+ 1	+ 7	− 14	+ 8	+ 1.5	− 1.0
823	0.687	+ 35	− 25	+ 20	− 3	+ 49	+ 40	− 13	− 14	+ 20	+ 11	− 2	+ 5	+ 0.7	− 1.0
824	0.713	+ 1	− 29	− 16	+ 12	+ 19	− 8	− 29	− 16	+ 6	+ 19	− 16	− 12	+ 0.3	− 1.0
825	0.784	+ 3	+ 8	− 31	+ 32	+ 46	+ 46	− 28	+ 2	+ 2	+ 28	− 3	+ 7	+ 1.0	− 0.9
826	0.602	+ 24	− 10	− 3	− 4	+ 66	− 1	− 18	− 6	+ 11	+ 11	+ 7	− 9	− 1.4	− 0.9
827	0.572	+ 13	− 2	− 10	+ 10	+ 42	− 35	− 23	− 3	+ 10	+ 18	− 5	− 21	+ 1.3	− 0.8⁵
828	0.708	− 4	− 28	0	+ 31	+ 32	+ 59	− 32	− 16	+ 13	+ 28	− 10	+ 12	+ 0.9	− 0.8⁵
829	1.094	+ 19	− 25	+ 6	+ 19	− 11	+ 18	− 21	− 14	+ 17	+ 3	− 32	− 3	+ 2.4	− 0.8
830	1.970	− 30	− 7	0	+ 21	+ 18	− 79	− 44	− 5	+ 12	+ 23	− 17	− 37	+ 0.1	− 0.8
831	1.043	− 29	− 35	− 47	− 6	+ 6	− 15	− 43	− 19	− 6	+ 10	− 28	− 14	− 0.6	− 0.8
832	0.426	+ 40	− 30	− 67	+ 69	+ 24	+ 107	− 10	− 17	− 13	+ 47	− 14	+ 29	− 0.6	− 0.6⁵
833	1.342	− 11	− 14	+ 26	− 5	+ 49	+ 63	− 34	− 9	+ 19	+ 11	− 1	− 30	− 0.7	− 0.5
834	0.526	+ 74	− 40	− 21	+ 27	+ 123	+ 105	+ 7	− 21	+ 3	+ 26	+ 35	+ 28	− 0.5	− 0.4
835	0.550		− 23	+ 10		+ 89	+ 87		− 13	+ 14		+ 17	+ 23	− 0.5	− 0.3
836	0.948	− 20	− 24	− 71	+ 21	+ 47	+ 50	− 39	− 14	+ 15	+ 24	− 3	+ 10	− 1.2	− 0.3
837	1.178	− 3	− 33	− 19	− 48	+ 1	+ 47	− 30	− 18	+ 3	− 10	− 25	+ 9	− 0.7	− 0.2
838	0.755	+ 32	+ 13	− 18	+ 55	+ 38	+ 33	− 13	+ 4	+ 5	+ 41	− 7	+ 4	− 0.5	− 0.1⁵
839	1.234	+ 3	− 27	+ 5	+ 12	+ 65	+ 21	− 27	− 15	+ 14	+ 20	+ 5	0	− 0.2	− 0.2
840	0.626	+ 19	− 30	− 1	+ 26	+ 42	+ 40	− 20	− 17	+ 13	+ 26	+ 6	+ 6	+ 1.5	− 0.3
841	0.560	+ 44	+ 5	− 18	+ 53	+ 23	+ 22	− 8	0	+ 7	+ 40	− 16	0	+ 1.1⁺	− 0.3

No.	B. D. or Br.—St.	Mag.	1900.0 α	δ	α μ₁	α μ₂	α μ₃	δ μ₁	δ μ₂	δ μ₃	μ''α	μ''δ
780	56°.531 †	10.2	2h 12m 15s	56° 47′.2	− 0″.006	− 0″.001	0″.000	+ 0″.019	− 0″.008	+ 0″.002	− 0″.002	+ 0″.004
781	510	11.8	12 13	47.1	− 10	+ 4	− 4	+ 1	− 7	0	− 3	− 1
782	377	12.2	11 46	47.1	− 19	− 15	− 5	+ 11	+ 5	+ 1	− 11	+ 4
783	56°.509 †	10.3	11 47	46.6	− 36	− 14	+ 8	+ 11	+ 2	− 2	− 9	+ 2
784	466	12.7	12 4	46.2	− 28	− 8	+ 9	− 6	− 3	− 21	− 4	− 13
785	409	11.9	11 51	45.5	− 46	0	+ 10	+ 23	− 14	− 11	− 6	− 3
786	408	13.0	11 50	45.5	+ 11	− 14	− 6	+ 22	− 14	− 18	− 4	− 7
787	405	13.8	11 50	45.2	− 37	− 10	− 12	+ 36‡	+ 11	− 12	− 18	+ 6
788	386	11.5	11 47	45.1	− 5	+ 4	+ 3	+ 26	+ 8	− 1	+ 1	+ 8
789	506	12.5	12 12	44.8	− 31	+ 1	+ 29	− 3	+ 14	+ 24	+ 7	+ 15
791	414	11.4	11 52	44.5	− 4	− 2	+ 6	+ 5	+ 9	− 11	+ 1	− 2
792	393	12.9	11 48	43.3	− 17	− 12	+ 1	+ 1	− 4	+ 1	− 7	− 0
793	517	11.1	12 15	43.3	− 36	− 4	+ 1	+ 30	− 15	− 17	− 10	− 5
794	427	11.3	11 55	43.1	− 16	− 17	+ 7	+ 1	+ 1	− 12	− 5	− 5
795	56°.521 †	10.8	12 0	43.0	− 22	+ 4	+ 8	+ 2	− 20	+ 5	0	− 2
796	480	13.7	12 6	42.6	− 37‡	− 14	+ 14	+ 22	− 15	− 15	− 6	− 6
797	431	12.6	11 56	42.5	− 16	− 13	+ 6	+ 11	+ 8	+ 6	− 4	+ 8
798	56°.530 †	6.9	12 12	42.4	− 45	− 9	+ 14	− 4	− 6	− 20	− 7	− 12
799	467	13.7	12 4	42.4	+ 5	+ 16‡	+ 6	+ 1	+ 2	+ 1	+ 8	+ 1
801	404	12.1	11 50	42.0	− 7	− 13	− 9	+ 23	− 8	− 8	− 9	− 0
802	420	12.5	11 53	41.9	− 22	− 11	+ 3	+ 5	+ 9	− 10	− 7	− 1
803	511	12.4	12 13	41.9	− 13	+ 5	+ 11	+ 32	+ 3	− 1	+ 3	+ 8
804	56°.516 †	10.5	11 53	41.7	− 23	− 20	+ 13	+ 1	− 2	− 7	− 4	− 4
805	56°.518 †	11.1	11 57	41.7	− 25	− 16	− 7	+ 24	− 1	− 14	− 14	− 1
806	429	13.2	11 56	41.5	− 10	− 27	0	+ 7	+ 9	+ 6	− 9	+ 7
807	440	14.0	11 58	41.5	− 34	− 9	− 2	+ 2	− 12	+ 2	− 12	− 1
808	56°.517 †	10.3	11 54	41.4	− 27	− 11	+ 9	+ 17	− 8	+ 1	− 5	+ 3
809	476	10.7	12 5	41.3	− 28	− 11	+ 10	+ 21	− 15	− 15	− 5	− 6
810	447	11.3	11 59	41.3	− 23	− 1	+ 2	− 2	− 1	− 4	− 5	− 3
811	475	11.3	12 5	41.1	− 15	− 19	+ 11	− 9	− 1	− 2	− 3	− 3
812	435	11.7	11 57	41.1	− 20	− 2	− 17	+ 11	− 4	− 1	− 14	+ 1
813	439	12.4	11 58	41.1	− 17‡	− 14	+ 3‡	+ 31‡	+ 2	− 8‡	− 6	+ 4
814	56°.520 †	10.3	11 59	41.0	− 20	− 12	0	+ 4	− 24	− 12	− 8	− 11
815	56°.519 †	10.1	11 57	41.0	− 50	− 13	+ 8	+ 15	− 18	+ 4	− 12	+ 1
816	400	11.1	11 49	40.9	− 7	+ 2	+ 9	+ 14	+ 1	+ 8	+ 3	+ 8
817		13.4	11 49	40.8	− 26‡	− 27		+ 23‡	+ 6‡		− 26	+ 14
818		12.6	11 50	40.8	− 1‡	− 12		+ 71‡	+ 5‡		− 6	+ 38
819	403	11.8	11 50	40.7	− 4	+ 3	+ 11	+ 16‡	+ 2	− 51‡	+ 5	− 21
820	533	11.6	12 21	40.8	− 25	− 1	+ 12	+ 17	0	+ 9	0	+ 9
821	411	12.9	11 51	40.8	− 14	− 10	0	+ 6	+ 10	+ 16	− 6	+ 12
822	56°.515 †	9.5	11 52	40.6	− 24	− 16	+ 1	− 2	− 11	+ 11	− 9	+ 2
823	443	11.8	11 59	40.6	− 9	− 15	+ 20	− 2	+ 1	+ 8	+ 4	+ 5
824	457	11.6	12 1	40.6	− 25	− 17	+ 6	+ 10	− 13	− 9	− 7	− 5
825	430	11.2	11 56	40.6	− 24	+ 1	+ 2	+ 19	− 0	+ 10	− 5	+ 10
826	512	12.5	12 13	40.5	− 14	− 7	+ 11	+ 3	+ 10	− 6	0	0
827	424	12.8	11 54	40.5	− 19‡	− 4	+ 10	+ 9	− 2	− 18	− 1	− 7
828	434	11.7	11 57	40.5	− 28	− 17	+ 13	+ 19	− 7	+ 15	− 5	+ 10
829	56°.510 †	9.5	11 46	40.4	− 17	− 15	+ 17	− 6	− 29	0	0	− 9
830	56°.522 †	6.7	12 3	40.4	− 40	− 6	+ 12	+ 14	− 14	− 34	− 5	− 17
831	56°.525 †	9.8	12 8	40.4	− 39	− 20	− 6	+ 2	− 25	− 11	− 18	− 11
832	491	14.0	12 8	40.2	− 6‡	− 18‡	− 13	+ 39	− 11‡	+ 32	− 12	+ 23
833	56°.527 †	8.6	12 9	40.1	− 30	− 10	+ 19	+ 3	+ 2	− 27	0	− 12
834	484	13.2	12 7	40.0	+ 11	− 22	+ 3	+ 18	+ 38	+ 31	− 1	+ 29
835	483	13.0	12 7	39.9		− 14‡	+ 14‡		+ 20	+ 26	+ 5	+ 24
836	56°.529 †	10.3	12 12	40.0	− 35	− 15	− 15	+ 16	+ 0‡	+ 13	− 20	+ 10
837	56°.526 †	9.2	12 9	39.9	− 26	− 19	+ 3	− 18	− 22	+ 12	− 10	− 4
838	486	11.3	12 7	39.8	− 9	+ 3	+ 5	+ 32	− 4	+ 7	+ 1	+ 10
839	56°.524 †	9.0	12 5	39.8	− 23	− 16	+ 14	+ 11	+ 8	+ 3	− 3	+ 6
840	419	12.3	11 53	40.0	− 16	− 18	+ 13	+ 17	− 3	+ 9	+ 2	+ 8
841	428	12.9	11 55	40.0	− 4	− 1	+ 7	+ 31	− 13	+ 3	+ 2	+ 6

Reduction to absolute P.M.: Δ μ''α = − 0″.006; Δ μ''δ = + 0″.007.

| No. | diameter | α | | | δ | | | α | | | δ | | | ϰ | γ |
		M₁	M₂	M₃	M₁	M₂	M₃	m₁	m₂	m₃	m₁	m₂	m₃		
842	0r.550	+ 0r.069	− 0r.031	+ 0r.013	+ 0r.034	+ 0r.013	+ 0r.043	+ 0″.004	− 0″.018	+ 0″.018	+ 0″.030	− 0″.020	+ 0″.007	+ 1p.1	− 0p.3
843	0 .553	+ 51	− 34	− 3	+ 41	+ 34	− 10	− 4	− 19	+ 9	+ 34	− 9	− 11	− 1.0	− 0.1
844	0 .598	+ 38	+ 6	+ 2	− 20	+ 47	+ 41	− 10	+ 1	+ 10	+ 4	− 2	+ 7	− 1.7	− 0.1
845	0 .499	− 20	− 30	− 17	+ 2	+ 48	+ 31	− 39	− 17	+ 8	+ 15	− 3	+ 3	+ 2.0	− 0.0
846	0 .825	− 16	+ 17	− 28	+ 17	+ 43	+ 16	− 37	+ 6	+ 4	+ 22	− 6	− 2	+ 2.1	+ 0.1
847	0 .494	+ 43	− 22	− 31	+ 73	+ 19	+ 28	− 8	− 13	+ 2	+ 49	− 17	+ 2	+ 0.5	+ 0.1
848	0 .458	+ 26	− 18	− 18	− 17	+ 47	+ 17	− 16	− 11	+ 6	+ 5	− 3	− 2	+ 0.6	+ 0.2
849	0 .576	+ 57	− 84	− 7	+ 32	+ 0	+ 106	− 1	− 43	+ 11	+ 30	− 27	+ 30	+ 1.5	+ 0.6
850	0 .692	+ 26	− 43	− 10	− 1	+ 7	+ 27	− 16	− 24	+ 10	+ 14	− 24	+ 3	+ 2.1	+ 0.7
851	0 .762	+ 19	0	− 10	+ 24	+ 25	+ 33	− 19	− 3	+ 10	+ 26	− 16	+ 5	+ 1.6	+ 0.7
852	0 .580	+ 21	+ 24	+ 46	+ 7	+ 8	+ 43	− 18	+ 9	+ 26	+ 18	− 22	+ 8	− 0.7	+ 0.9
853	0 .519	+ 91	− 18	+ 29	+ 44	+ 57	+ 76	+ 17	− 11	0	+ 36	+ 1	+ 20	− 0.7	+ 1.0
855	0 .598	+ 7	− 29	+ 3	+ 34	+ 18	+ 53	− 24	− 17	+ 10	+ 31	− 18	+ 12	− 0.6	+ 1.1
856	0 .451	+ 47	− 13	+ 25	+ 21	+ 38	+ 13	− 5	− 9	+ 4	+ 25	− 9	− 2	+ 0.6	+ 1.2
857	0 .498	+ 50	− 17	− 1	+ 6	+ 29	+ 86	− 4	− 11	+ 13	+ 18	− 13	+ 23	+ 0.7	+ 1.2
858	0 .507	+ 68	− 27	+ 59	− 14	+ 27	+ 53	+ 5	− 16	+ 33	+ 8	− 14	+ 12	+ 0.5	+ 1.3
859	0 .545	+ 50	− 11	+ 1	+ 30	+ 36	+ 32	− 4	− 8	+ 14	+ 29	− 10	+ 5	+ 2.3	+ 1.5
860	0 .978	0	− 40	− 24	− 11	+ 15	+ 62	− 28	− 22	+ 6	+ 10	− 21	+ 16	+ 2.1	+ 1.6
861	0 .635	+ 67	− 6	− 17	+ 18	+ 36	+ 74	+ 5	− 5	+ 4	+ 24	− 9	+ 20	− 0.7	+ 1.7
862	0 .558	+ 26	− 20	− 21	+ 15	+ 64	+ 21	− 15	− 12	+ 2	+ 22	+ 4	+ 1	− 1.5	+ 1.8
863	0 .741	+ 1	− 53	− 54	+ 9	− 7	+ 19	− 28	− 29	− 5	+ 20	− 32	+ 1	+ 2.1	+ 1.9
864	0 .540	+ 62	− 17	− 7	+ 24	− 2	+ 1	+ 2	− 11	+ 10	+ 27	− 29	− 6	+ 0.4	+ 2.0
865	0 .559	+ 52	− 25	− 30	+ 14	+ 32	+ 41	+ 2	− 15	+ 1	+ 22	− 12	+ 8	+ 0.2	+ 2.0
866	0 .599	+ 73	+ 19	− 1	+ 46	+ 46	+ 21	+ 8	+ 7	+ 10	+ 38	− 4	+ 1	− 1.4	+ 2.1
867	0 .615	+ 73	+ 26	− 31	+ 46	+ 24	+ 45	+ 8	+ 9	+ 2	+ 39	− 17	+ 11	+ 0.9	+ 2.7
868	0 .417	+ 37	− 9	− 20	+ 46	+ 7	+ 12	− 9	− 8	+ 6	+ 39	− 25	− 1	+ 0.8	+ 2.8
869	0 .884	+ 14	− 15	− 27	+ 47	+ 35	− 17	− 20	− 11	+ 3	+ 39	− 11	− 11	+ 0.6	+ 2.9
870	1 .120	+ 41	0	− 40	+ 10	+ 0	− 6	− 7	− 3	0	+ 21	− 29	− 7	+ 2.3	+ 3.3
871	0 .558	+ 63	− 3	− 17	+ 34	+ 37	+ 3	+ 4	− 5	+ 5	+ 33	− 10	− 3	+ 0.5	+ 3.6
872	0 .576	+ 58	+ 18	− 34	+ 10	+ 30	− 17	− 2	+ 4	+ 1	+ 23	− 15	− 10	+ 1.4	+ 5.1
873	0 .619	+ 15	+ 12	− 31	+ 45	+ 58	+ 48	− 19	+ 2	+ 2	+ 40	− 1	+ 13	+ 0.5	+ 5.1
874	0 .962	+ 7	− 9	− 51	+ 54	+ 24	+ 2	− 21	− 8	− 8	+ 45	− 18	− 2	+ 0.8	+ 5.9
875	0 .660	+ 57	+ 32	+ 32	+ 23	+ 29	+ 22	+ 2	+ 11	+ 25	+ 30	− 17	+ 10	+ 2.1	+ 6.0
876	0 .663	+ 56	+ 36	+ 12	+ 71	+ 53	+ 9	+ 2	+ 13	+ 17	+ 54	− 4	+ 1	+ 1.2	+ 6.0
877	0 .552	+ 29	− 14	− 20	+ 42	+ 61	+ 19	− 11	− 11	+ 5	+ 40	0	+ 4	− 0.1	+ 6.2
878	0 .851	+ 2	+ 22	+ 8	+ 9	+ 45	+ 24	− 21	+ 5	+ 14	+ 28	− 11	+ 8	− 0.1	+ 9.9
879	0 .556	+ 43	− 49	+ 1	+ 56	+ 34	− 1	− 1	− 30	+ 10	+ 52	− 11	0	− 1.3	+ 10.8
880	0 .763	+ 12	− 11	+ 15	+ 26	+ 72	+ 44	− 15	− 11	+ 14	+ 39	− 1	+ 16	− 1.9	+ 11.8
881	0 .588	+ 25	+ 6	+ 19	+ 9	+ 43	+ 36	− 8	− 4	+ 5	+ 32	+ 14	+ 14	− 0.1	+ 13.2
882	0 .518	+ 29	− 3	+ 2	− 32	+ 68	+ 13	− 3	− 9	+ 8	+ 17	− 3	+ 7	− 1.7	+ 16.8
883	0 .803	+ 66	− 3	− 36	− 22	+ 55	+ 2	+ 15	− 9	− 3	+ 22	− 10	+ 3	− 2.3	+ 17.5
884	0 .633	+ 14	− 2	− 41	+ 88	+ 40	− 29	− 7	− 11	− 5	− 3	− 20	− 7	− 2.0	+ 21.8
885	0 .567	+ 85	+ 31	− 24	+ 60	+ 81	− 37	+ 27	+ 4	+ 4	+ 10	− 1	+ 10	+ 0.6	+ 21.9
886	0 .716	+ 43	+ 11	− 28	+ 79	+ 49	− 30	− 7	+ 5	+ 3	+ 1	− 17	+ 7	+ 1.4	+ 22.1
887	0 .669	+ 55	+ 75	− 65	+ 80	+ 85	− 6	+ 14	+ 26	− 11	+ 3	0	0	0.0	+ 23.6
889	0 .739	− 30	+ 45	− 46	− 83	+ 109	− 39	− 24	+ 10	− 7	+ 9	+ 10	− 12	− 1.7	+ 28.4
890	0 .518	+ 91	+ 53	− 58	− 97	+ 67	+ 13	+ 36	+ 13	− 9	+ 3	+ 12	+ 6	+ 0.3	+ 29.0
891	0 .844	− 12	− 22	− 29	− 161	+ 14	− 44	− 15	− 2	+ 2	+ 28	− 37	− 14	+ 0.6	+ 29.2
892	0 .590	+ 38	+ 60	− 61	− 118	+ 90	− 38	+ 12	+ 14	− 7	+ 3	− 2	+ 13	+ 1.6	+ 31.1
893	0 .504	− 6	+ 27	− 49	− 29	+ 107	− 45	− 10	+ 0	+ 8	+ 41	+ 7	− 16	− 1.7	+ 31.2
894	0 .604	+ 16	+ 44	− 45	− 77	+ 103	+ 1	+ 2	+ 8	+ 7	+ 20	+ 4	− 1	− 2.1	+ 33.2
895	0 .550	+ 38	+ 86	+ 42	− 104	+ 85	+ 31	+ 15	+ 28	+ 7	+ 11	+ 6	+ 8	+ 2.5	+ 34.8
896	0 .649	+ 35	+ 59	+ 62	− 153	+ 62	− 43	+ 14	+ 13	+ 10	+ 12	+ 18	+ 18	+ 0.2	+ 35.4
897	0 .730	+ 32	+ 1	− 43	− 168	+ 119	− 5	+ 14	+ 16	− 4	+ 17	+ 9	+ 5	0.0	+ 36.9
898	0 .590	0	+ 48	+ 23	− 132	+ 76	− 16	− 2	+ 8	+ 1	+ 1	+ 11	− 9	− 3.0	+ 37.2
899	0 .554	+ 51	− 7	− 43	+ 61	+ 141	+ 54	+ 32	− 24	− 3	+ 55	+ 14	+ 6	+ 0.2	+ 46.6
901	0 .576	− 18	+ 70	− 131	+ 98	+ 147	− 55	+ 3	+ 11	− 34	+ 50	+ 14	+ 40	+ 1.2	+ 52.3
902	0 .582	− 76	+ 34	+ 65	− 163	+ 105	+ 47	− 19	+ 8	+ 13	+ 33	− 9	− 14	− 0.5	+ 57.8
	α = 2h 11m 7s to α = 2h 11m 51s.														
903	0 .538	+ 146	− 162	− 20	+ 5	− 25	+ 411	+ 17	− 61	+ 12	+ 17	+ 3	− 11	+ 5.8	− 59.7
904	0 .502	+ 98	− 142	− 93	0	+ 2	+ 374	− 6	− 51	− 14	+ 15	+ 16	− 23	+ 5.8	− 59.6

No.	B. D. or Br.—St.	Mag.	α 1900.0	δ	α μ₁	α μ₂	α μ₃	δ μ₁	δ μ₂	δ μ₃	μ"α	μ"δ
842	428a	13.0	2ʰ 11ᵐ 56ˢ	56° 40'.0	+ 0".008‡	− 0".019	+ 0".018	+ 0".021	− 0".017	+ 0".010	+ 0".006	+ 0".006
843	501	12.9	12 11	39.8	0	− 20	+ 9	+ 26	− 6	− 8	0	+ 1
844	525	12.5	12 16	39.8	− 6	− 0	+ 10	− 4	+ 1	+ 10	+ 3	+ 4
845	396	13.4	11 49	39.7	− 35	− 18	+ 8	+ 6	− 0	+ 6	− 9	+ 4
846	389	10.9	11 48	39.6	− 33	+ 5	+ 4	+ 13	− 3	+ 1	− 5	+ 3
847	452	13.5	12 0	39.6	− 4	− 14	+ 2‡	+ 40	− 14‡	+ 5	− 3	+ 9
848	1327	13.8	11 59	39.4	− 12	− 12	+ 6	− 4	− 0	+ 1	− 3	0
849	417	12.7	11 53	39.1	+ 3	− 44	+ 11	+ 21	− 24	+ 33	− 5	+ 16
850	394	11.8	11 48	39.1	− 12	− 25	+ 10	+ 5	− 21	+ 6	− 4	− 1
851	412	11.3	11 51	39.0	− 15	− 4	+ 10	+ 17	− 13	+ 8	0	+ 5
852	494	12.7	12 8	38.8	− 14	+ 8	+ 26	+ 9	− 19	+ 11	+ 11	+ 3
853	492	13.2	12 8	38.7	+ 21	− 12	0	+ 27	+ 4	+ 23	+ 2	+ 19
855	490	12.5	12 8	38.5	− 20	− 18	+ 10	+ 22	− 15	+ 15	− 4	+ 9
856	444	13.9	11 59	38.4	− 1	− 10	+ 4	+ 16	− 6	+ 1	− 1	+ 3
857	441	13.4	11 58	38.4	0	− 12	+ 13	+ 9	− 10	+ 26	+ 3	+ 13
858	448	13.3	12 0	38.3	+ 9	− 17	+ 33	− 1	− 11	+ 15	+ 14	+ 4
859	383	13.0	11 47	38.1	0	− 9	+ 14	+ 20	− 7	+ 8	+ 5	+ 7
860	56°.513 †	10.1	11 48	38.1	− 24	− 23	+ 6	+ 1	− 18	+ 19	− 9	+ 5
861	493	12.2	12 8	38.0	+ 8	− 6	+ 4	+ 15	− 6	+ 23	+ 2	+ 14
862	515	12.9	12 14	37.9	− 12	− 13	+ 2	+ 14	+ 7	+ 4	− 5	+ 7
863	56°.514 †	11.4	11 48	37.8	− 24	− 30	− 5	+ 11	− 29	+ 4	− 16	− 2
864	453a	13.0	12 0	37.7	+ 6	− 12	+ 10	+ 18	− 26	− 3	+ 3	− 3
865	459	12.9	12 2	37.6	+ 2	− 16	+ 1	+ 13	− 9	+ 11	− 3	+ 6
866	514	12.5	12 14	37.6	+ 11	+ 6	+ 10	+ 29	− 1	+ 4	+ 9	+ 9
867	433	12.4	11 57	37.0	+ 11	+ 8	+ 2	+ 30	− 14	+ 14	+ 6	+ 11
868		14.0	11 58	36.9	− 6	− 9	+ 6	+ 30	− 22‡	+ 2	− 1	+ 3
869	446	10.6	11 59	36.7	− 17	− 12	+ 3	+ 30	− 8	− 8	− 6	+ 1
870	56°.511 †	9.4	11 47	36.3	− 4	− 4	0	+ 12	− 26	− 4	− 2	− 5
871	482	12.9	12 7	36.1	+ 7	− 6	+ 5	+ 24	− 7	0	+ 3	+ 4
872	421	12.7	11 53	34.6	+ 5	+ 3	+ 1	+ 14	− 12	− 7	+ 2	− 3
873	449	12.4	12 0	34.6	− 16‡	+ 1	+ 2	+ 31	+ 2	+ 16	− 3	+ 16
874	56°.528 †	10.2	12 9	33.8	− 18	− 9	− 8	+ 36	− 15	+ 1	− 11	+ 6
875	390	12.0	11 48	33.7	− 5	− 10	+ 25	+ 21	− 14	− 7	+ 16	− 2
876	426	12.0	11 54	33.7	+ 5	+ 12	+ 17	+ 45	− 1	+ 4	+ 13	+ 13
877	471	12.9	12 4	33.5	− 8	− 12	+ 5	+ 31	+ 3	+ 7	− 2	+ 12
878	56°.523 †	10.8	12 4	29.8	− 18	+ 4	+ 14	+ 19	− 8	+ 11	+ 3	+ 8
879	507	12.9	12 12	29.0	+ 2	− 31	+ 10	+ 43	− 8	+ 4	− 2	+ 11
880	529	11.3	12 17	28.0	− 12	− 12	+ 14	+ 30	+ 4	+ 20	+ 1	+ 18
881	468	12.6	12 4	26.5	− 5	− 5	+ 5	+ 23‡	− 11	+ 18	0	+ 12
882	522	13.2	12 16	23.0	0	− 10	+ 8	+ 8	− 1	+ 11	+ 1	+ 7
883	531	11.0	12 20	22.3	+ 18	− 10	− 3	+ 13	− 8	+ 7	0	+ 5
884	1945	12.3	12 18	18.1	− 5	− 12	− 5	− 12	− 18	− 2	− 7	− 8
885	445	12.8	11 59	17.9	+ 29	+ 3	+ 4	− 0	+ 1	− 6	+ 10	− 3
886	422	11.6	11 53	17.7	+ 9	− 6	+ 3	− 9	− 15	− 3	+ 2	− 7
887	463	12.0	12 3	16.2	+ 16	+ 25	− 11	− 7	+ 2	+ 5	+ 5	+ 1
889	523	11.5	12 16	11.4	− 23	+ 9	− 7	− 1	+ 12	− 6	− 7	0
890	455	13.2	12 1	10.9	+ 37	+ 13	− 9	− 8	− 10	+ 11	+ 8	+ 1
891	55°.574 †	10.8	11 59	10.7	− 14	− 2	+ 2	− 39	− 35	− 9	− 3	− 23
892	415	12.6	11 52	8.8	+ 13	+ 14	− 7	− 14	− 1	− 7	+ 3	− 7
893	520	13.4	12 15	8.7	− 9‡	− 1	− 8	+ 31	+ 9	− 10	− 6	+ 5
894	530	12.5	12 19	6.6	+ 2‡	+ 7‡	− 7‡	+ 10‡	+ 5‡	+ 6‡	− 1	+ 7
895	534	13.0	12 21	5.1	+ 15	+ 27	− 7	− 0	+ 5	+ 15	+ 7	+ 6
896	458	12.1	12 2	4.5	+ 14	+ 13	− 10	− 23	− 17	− 11	+ 2	− 15
897	464	11.5	12 3	3.0	+ 14	+ 16	− 4	− 28	+ 10	+ 2	− 2	− 3
898	547	12.6	12 25	2.7	− 2	+ 7	− 1	− 10	− 10	− 2	+ 1	− 6
899	460	12.9	12 2	55° 53'.5	+ 30‡	− 24‡	+ 4	+ 43‡	+ 14‡	+ 15‡	0	+ 22
901		12.7	11 55	47.7	− 1	+ 11	− 35‡	+ 37	+ 14	− 30‡	− 15	− 2
902		12.7	12 7	42.3	− 25‡	− 8	− 14‡	+ 19‡	− 9‡	− 1‡	− 15	+ 2
	α = 2ʰ 11ᵐ 7ˢ to		α = 2ʰ 11ᵐ 51ˢ.									
903		13.1	2ʰ 11ᵐ 20ˢ	57° 39'.0	+ 12‡	− 62	+ 10	+ 7‡	+ 8‡	0‡	− 7	+ 4
904		13.4	11 20	38.9	− 11‡	− 52	− 16	+ 5‡	+ 21‡	− 12‡	− 24	0

Reduction to absolute P.M.: Δ μ"α = − 0".006; Δ μ"δ = + 0".007.

No.	diameter	α M₁	α M₂	α M₃	δ M₁	δ M₂	δ M₃	α m₁	α m₂	α m₃	δ m₁	δ m₂	δ m₃	x	γ
905	0ʳ.750	+ 0ʳ.159	− 0ʳ.049	− 0ʳ.026	− 0ʳ.001	+ 0ʳ.012	+ 0ʳ.396	+ 0."024	− 0".007	+ 0".010	+ 0".012	+ 0".017	− 0".002	+ 6ᵖ.4	− 56ᵖ.3
907	0.717	+ 120	− 89	− 36	+ 40	+ 27	+ 444	+ 7	− 29	+ 3	+ 27	+ 21	+ 36	+ 3.8	− 50.3
908	0.638	+ 130	− 35	− 79	+ 62	+ 26	+ 300	+ 14	− 5	− 11	+ 34	+ 15	+ 12	+ 3.7	− 42.2
909	1.267	+ 199	+ 11	+ 22	− 23	− 129	+ 81	+ 47	+ 18	+ 28	− 8	− 62	− 64	+ 6.7	− 41.9
910	0.798	+ 110	− 12	− 67	+ 60	− 4	+ 276	+ 4	+ 6	− 4	+ 33	− 2	+ 7	+ 5.7	− 40.9
914	0.637	+ 118	− 57	− 75	+ 73	− 14	+ 211	+ 13	− 19	− 10	+ 37	− 14	+ 14	+ 3.6	− 30.1
915	0.591	+ 91	− 5	− 81	+ 19	+ 2	+ 184	0	+ 5	− 12	+ 10	− 7	+ 8	+ 4.1	− 29.2
916	0.620	+ 88	− 1	− 60	+ 27	− 16	+ 198	− 2	+ 6	+ 1	+ 14	− 3	+ 17	+ 7.7	− 27.1
918	0.959	+ 49	− 15	− 58	+ 20	+ 16	+ 167	− 19	0	− 2	+ 11	− 2	+ 8	+ 4.7	− 26.3
919	0.628	+ 64	− 29	− 71	− 6	− 12	+ 190	− 11	− 8	− 9	− 2	− 16	+ 18	+ 3.1	− 24.9
920	1.093	+ 41	− 52	− 37	+ 52	+ 11	+ 216	− 22	− 20	+ 8	+ 27	− 9	+ 34	+ 7.0	− 22.2
922	0.573	+ 58	+ 70	− 89	+ 128	+ 17	+ 133	− 12	+ 38	− 10	+ 65	− 8	+ 12	+ 7.2	− 18.4
923	0.731	+ 57	− 4	− 57	+ 53	+ 28	+ 104	− 12	+ 2	+ 3	+ 29	− 2	+ 4	+ 4.0	− 17.5
924	0.806	+ 57	− 41	− 53	+ 29	+ 30	+ 120	− 11	− 17	− 2	+ 18	− 1	+ 10	+ 3.5	− 17.2
925	0.619	+ 108	+ 47	+ 15	+ 25	+ 71	+ 90	+ 14	+ 26	+ 25	+ 21	+ 17	+ 2	+ 6.0	− 15.6
926	0.756	+ 41	− 4	− 89	+ 42	+ 25	+ 104	− 19	0	− 12	+ 24	− 6	+ 7	+ 5.4	− 15.5
927	0.638	+ 64	− 26	− 76	+ 25	+ 17	+ 120	− 7	− 10	− 7	+ 16	− 10	+ 14	+ 6.2	− 15.2
928	0.879	+ 31	− 27	− 35	+ 35	+ 12	+ 58	− 23	− 11	+ 6	+ 21	− 12	+ 8	+ 4.9	− 14.7
929	0.943	+ 45	− 49	− 81	− 13	+ 57	+ 71	− 16	− 22	+ 7	− 2	+ 8	+ 1	+ 7.1	− 14.2
930	0.501	+ 98	− 51	− 62	+ 45	+ 52	− 10	+ 10	− 23	− 1	+ 27	+ 5	− 29	+ 6.5	− 12.8
931	0.788	+ 32	− 27	− 52	+ 78	+ 58	− 6	− 21	− 12	− 1	+ 43	+ 8	+ 25	+ 4.3	− 11.9
932	0.501	+ 60	− 44	− 42	+ 17	− 16	+ 15	− 7	− 20	+ 3	+ 14	− 28	+ 28	+ 4.5	− 11.8
933	0.740	+ 35	− 24	− 78	+ 3	+ 32	+ 106	− 19	− 11	+ 11	+ 7	− 5	+ 58	+ 3.4	− 10.5
934	0.524	+ 70	− 12	− 123	+ 16	+ 14	+ 12	− 1	− 6	+ 21	+ 15	− 16	+ 16	+ 7.0	− 9.6
935	0.764	+ 30	− 36	− 28	+ 31	+ 29	+ 8	− 20	− 17	+ 6	+ 22	− 7	+ 17	+ 3.2	− 9.5
936	0.479	+ 101	− 6	− 68	+ 24	+ 33	− 60	+ 14	− 3	− 4	+ 19	− 6	+ 39	+ 6.3	− 8.9
937	0.612	+ 70	− 2	− 73	+ 3	− 13	− 5	0	− 1	+ 6	+ 9	− 17	+ 20	+ 5.5	− 8.5
938	0.511	+ 56	− 28	+ 5	+ 72	+ 41	+ 71	− 7	− 14	+ 19	+ 43	− 3	+ 8	+ 4.3	− 8.1
939	0.460	+ 177	+ 7	− 52	+ 71	− 20	− 30	+ 52	+ 3	− 1	+ 43	− 13	+ 28	+ 4.4	− 7.9
941	0.661	+ 74	− 10	− 71	+ 20	− 20	+ 38	+ 2	− 5	− 7	+ 18	− 13	− 4	+ 4.5	− 7.7
942	0.741	+ 49	+ 10	− 87	+ 33	+ 46	− 13	− 10	+ 4	− 12	+ 24	0	+ 22	+ 5.2	− 7.7
943	0.646	+ 9	− 7	− 62	+ 46	+ 30	+ 9	− 39	+ 2	0	+ 30	− 10	+ 13	+ 6.9	− 7.2
944	0.707	+ 266	+ 223	+ 310	− 37	− 35	− 118	+ 96	+ 109	+ 123	− 10	− 39	− 57	+ 2.6	− 7.1
945	0.571	+ 33	− 6	− 43	− 4	+ 58	+ 15	− 18	− 4	+ 7	+ 6	+ 4	+ 10	+ 7.2	− 6.9⁵
946	0.769	+ 26	− 26	− 38	− 5	+ 48	+ 10	− 21	− 13	+ 7	+ 5	0	+ 12	+ 6.3	− 6.9
947	0.557	+ 39	− 25	− 73	+ 64	+ 46	− 12	− 15	− 13	− 4	+ 39	− 2	+ 20	+ 7.2	− 6.8
948	0.558	+ 25	− 35	− 17	+ 20	+ 26	− 42	− 21	− 18	+ 14	+ 18	− 11	+ 30	+ 6.3	− 6.7
949	0.738	+ 12	+ 20	− 36	+ 14	+ 79	− 21	+ 28	+ 9	+ 5	+ 15	+ 15	+ 22	+ 4.3	− 6.5
950	0.848	+ 43	− 15	− 52	− 18	+ 77	− 25	− 12	− 8	− 1	0	+ 14	+ 23	+ 4.3	− 6.3
951	0.774	+ 23	− 27	− 36	+ 13	+ 40	− 18	− 22	− 15	+ 10	+ 15	− 6	+ 21	+ 7.5	− 6.3⁵
952	0.436	+ 53	− 56	− 84	+ 42	+ 15	− 46	− 7	− 28	− 11	+ 29	− 17	− 31	+ 4.9	− 5.8
953	0.598	+ 47	− 38	− 60	+ 23	+ 37	− 4	− 10	− 20	0	+ 20	− 7	− 16	+ 6.4	− 5.7
954	0.650	+ 52	− 24	− 88	+ 29	+ 61	− 43	− 7	− 14	− 9	+ 24	+ 4	− 28	+ 7.1	− 5.3
955	1.108	+ 21	− 29	− 70	+ 17	+ 7	− 22	− 22	− 15	+ 7	+ 18	− 21	+ 21	+ 4.5	− 5.3
956	0.521	+ 122	− 22	− 14	+ 112	− 29	+ 31	+ 27	− 12	+ 14	+ 64	− 11	− 2	+ 5.3	− 5.2
957	0.623	+ 72	− 36	− 61	+ 41	+ 33	− 28	+ 3	− 19	− 2	+ 30	− 9	+ 23	+ 5.5	− 5.1
958	0.675	+ 80	− 43	− 63	+ 43	+ 84	− 94	+ 7	− 22	− 3	+ 31	+ 16	+ 46	+ 5.6	− 4.9
959	1.459	− 10	− 4	− 76	− 21	− 18	− 3	− 37	− 3	− 8	0	− 34	− 14	+ 5.1	− 5.1
960	0.874	+ 25	− 41	− 37	+ 48	+ 6	+ 8	− 20	− 21	+ 8	+ 33	− 23	− 10	+ 6.6	− 5.1
961	0.606	+ 39	− 17	− 41	+ 25	+ 40	− 7	− 13	− 10	+ 4	+ 22	− 5	− 16	+ 4.8	− 4.7
962	0.869	+ 59	− 26	− 58	+ 26	+ 41	− 15	− 3	− 14	− 2	+ 22	− 5	− 17	+ 5.0	− 4.3
963	0.640	+ 23	− 33	− 53	+ 24	+ 43	− 34	− 20	− 18	− 3	+ 22	− 4	− 23	+ 3.1	− 3.1
964	0.981	− 33	− 18	− 53	+ 7	− 3	+ 11	− 48	− 11	+ 3	+ 14	− 29	− 7	+ 6.8	− 2.8
965	0.536	+ 9	− 8	− 72	+ 61	0	+ 8	− 27	− 6	− 7	+ 41	− 26	− 14	+ 5.0	− 2.7
966	0.848	− 7	− 37	− 77	+ 12	+ 48	+ 8	− 35	− 20	− 7	+ 17	− 3	− 8	+ 5.5	− 2.7
967	0.865	+ 32	− 14	− 71	+ 19	+ 44	− 9	− 15	− 10	− 3	+ 21	− 6	− 13	+ 7.3	− 2.2
969	0.860	+ 1	− 10	− 62	+ 51	+ 24	+ 1	− 30	− 7	− 3	+ 37	− 15	− 9	+ 5.2	− 2.2
970	0.779	+ 29	− 28	− 53	+ 25	+ 21	+ 1	− 17	− 17	+ 2	+ 24	− 17	− 9	+ 6.5	− 1.8
972	1.158	− 8	− 12	− 70	+ 18	+ 32	+ 56	− 34	− 8	− 6	+ 20	− 11	+ 10	+ 4.8	− 1.7
974	0.644	+ 33	− 21	− 91	− 16	+ 61	− 18	− 14	− 13	− 12	+ 4	+ 2	− 15	+ 6.2	− 1.3

No.	B. D. or Br.—St.	Mag.	1900.0 α	1900.0 δ	α μ_1	α μ_2	α μ_3	δ μ_1	δ μ_2	δ μ_3	μ''_α	μ''_δ
905		11.4	2ʰ 11ᵐ 16ˢ	57° 35′.7	+ 0″.020	− 0″.008	+ 0″.008	+ 0″.002‡	+ 0″.022	+ 0″.008‡	+ 0″.007	+ 0″.010
907	343	11.6	11 36	29.6	+ 5	− 30	+ 1	+ 17‡	+ 26	+ 44	− 6	+ 33
908	344	12.2	11 37	21.5	+ 14	− 6	+ 12	+ 25	+ 20‡	+ 19	− 4	+ 21
909	57°.536 †	8.9	11 14	21.2	+ 47	+ 17	+ 27	− 17	+ 57	− 58	+ 30	− 47
910	289	11.1	11 22	20.3	+ 4	+ 5	+ 5	+ 24	+ 3	+ 13	0	+ 13
914	345	12.2	11 37	9.5	+ 15	− 20	− 11	+ 28	− 10	+ 19	− 7	+ 14
915	336	12.6	11 33	8.7	+ 2	− 4	− 13	+ 1	− 3	+ 12	− 5	+ 5
916	233	12.4	11 7	6.6	0	+ 5	0‡	+ 5	+ 1	+ 21	+ 1	+ 12
918	56°.499 †	10.2	11 29	5.7	− 17	− 1	− 3	+ 2	+ 2	+ 12	− 6	+ 7
919	359a	12.3	11 41	4.3	− 8	− 9	− 10‡	− 11	− 12	+ 22	− 9	+ 5
920	56°.487 †	9.6	11 13	1.7	− 19	− 21	+ 7	+ 18	− 5	+ 37	− 6	+ 22
922	250	12.8	11 11	56° 57′.9	− 9	+ 37‡	− 10	+ 56	− 4	+ 15	+ 2	+ 20
923	338	11.5	11 34	57.0	− 9	+ 1	− 3	+ 20	+ 2	+ 7	− 3	+ 9
924	346	11.0	11 38	56.7	− 8	− 18	− 2	+ 9	+ 3	+ 13	− 7	+ 9
925	284	12.4	11 20	55.1	+ 17	+ 25	+ 25	+ 12	+ 21	+ 5	+ 23	+ 11
926	56°.496 †	11.3	11 25	55.0	− 16	− 1	− 12	+ 15	− 2	+ 10	− 10	+ 8
927	278	12.2	11 18	54.8	− 4	− 11	− 7	+ 7	− 6	+ 17	− 7	+ 9
928	315	10.6	11 28	54.2	− 20	− 12	+ 6	+ 12	− 8	− 5	− 5	− 1
929	56°.488 †	10.3	11 11	53.7	− 13	− 23	− 7	− 11	+ 12	+ 2	− 12	+ 1
930	270	13.4	11 16	52.3	+ 14	− 24	− 1	+ 18	+ 8	− 26	− 3	− 6
931	332	11.1	11 32	51.5	− 17	− 13	− 1	+ 34	+ 12	− 22	− 8	+ 1
932	325	13.4	11 30	51.4	− 3	− 21	+ 3	+ 5	− 24	− 25	− 4	− 17
933	349	11.5	11 39	50.1	− 15	− 12	− 11	− 2	− 1	− 55	− 12	− 28
934	258	13.2	11 13	49.1	+ 3	− 7	− 21	+ 6	− 13	− 14	− 11	− 9
935	355	11.3	11 40	49.1	− 16	− 18	+ 6	+ 13	− 3	− 14	− 5	− 4
936	276	13.6	11 18	48.5	+ 18	− 4	− 4	+ 10	− 3	− 36‡	+ 1	− 16
937	297	12.4	11 24	48.1	+ 4	− 2	− 6	0	− 14	− 17	− 2	− 12
938	334	13.3	11 32	47.7	− 3	− 15	+ 19	+ 34	0	+ 11	+ 5	+ 14
939	330	13.8	11 32	47.5	+ 56‡	+ 2‡	− 1	+ 34	− 10	− 25	+ 14	− 6
941	327	12.0	11 31	47.2	+ 6	− 6	− 7	+ 9	− 10	− 1	− 3	− 1
942	307	11.4	11 26	47.2	− 6	+ 3	− 12	+ 15	+ 3	− 20	− 7	− 5
943	262a	12.1	11 14	46.7	− 35‡	+ 1	0	+ 21	− 7	− 11	− 8	− 2
944	371	11.7	11 44	46.7	+ 100	+ 108	+ 123	− 19	− 36	− 54	+ 113	− 41
945	251	12.8	11 11	46.5	− 14	− 5	+ 7	− 3	+ 7	− 8	− 1	− 3
946	56°.492 †	11.3	11 18	46.4	− 17	− 14	+ 7	− 4	+ 3	− 10	− 4	− 5
947	252	12.9	11 11	46.3	− 11	− 14	− 4	+ 30	+ 1	− 18	− 8	− 1
948	275	12.9	11 18	46.3	− 17	− 19	+ 14	+ 9	− 8	− 28	− 2	− 14
949	335	11.5	11 32	46.1	− 24	+ 8	+ 5	+ 6	+ 18	− 19	− 1	− 3
950	333	10.8	11 32	45.9	− 8	− 9	− 1	+ 9‡	+ 17	− 20	− 5	− 8
951	241	11.2	11 9	45.9	− 18	− 16	+ 10	+ 6	− 3	− 19	− 3	− 9
952	317	14.0	11 28	45.6	− 3	− 29	− 11	+ 20	− 14	− 29	− 13	− 13
953	1313	12.5	11 17	45.2	− 6	− 21	0	+ 11	− 4	− 14	− 7	− 5
954	255	12.1	11 12	44.9	− 3	− 15	− 9	+ 15	+ 7	− 26	− 9	− 7
955	56°.502 †	9.5	11 31	44.9	− 18	− 16	− 7	+ 9	− 18	− 19	− 12	− 12
956	301	13.2	11 25	44.9	+ 31	− 13	+ 14	+ 55	− 8‡	0‡	+ 11	+ 12
957	1910	12.3	11 23	44.7	+ 7	− 20	− 2	+ 21	− 6‡	− 21	− 4	− 7
958	1908	11.9	11 23	44.5	+ 11	− 23	− 3	+ 22	+ 19	− 44	− 4	− 12
959	56°.500 †	8.2	11 27	44.7	− 33	− 4	− 8	− 9	− 31	− 12	− 13	− 16
960	56°.491 †	10.6	11 16	44.7	− 16	− 22	+ 8	+ 24	− 20	− 8	− 5	− 3
961	320	12.5	11 29	44.3	− 9	− 11	+ 4	+ 13	− 2	− 14	− 3	− 4
962	312	10.7	11 27	44.0	+ 1	− 15	− 2	+ 13	− 2	− 15	− 4	− 5
963	1320	12.2	11 41	42.7	− 16	− 19	− 3	+ 13	− 1	− 20	− 10	− 7
964	56°.489 †	10.1	11 14	42.5	− 44	− 12	+ 3	+ 5	− 26	− 5	− 12	− 8
965	1319	13.1	11 27	42.3	− 23	− 7	− 7	+ 32	− 23	− 12	− 11	− 4
966	296	10.8	11 24	42.3	− 31	− 21	− 7	+ 8	0	− 6	− 16	− 1
967	249	10.7	11 11	41.9	− 11	− 11	− 3	+ 12	− 3	− 11	− 7	− 3
969	304	10.7	11 25	41.8	− 26	− 8	− 3	+ 28	− 12	− 7	− 10	0
970	272	11.2	11 17	41.5	− 13	− 18	+ 2	+ 15	− 14	− 7	− 7	− 3
972	56°.501 †	9.3	11 29	41.3	− 30	− 9	− 6	+ 11	− 8	+ 12	− 13	+ 7
974	280	12.2	11 19	41.0	− 10	− 14	− 12‡	− 5	+ 5	− 13	− 12	− 6

Reduction to absolute P.M.: $\Delta \mu''_\alpha = -0''.006$; $\Delta \mu''_\delta = +0''.007$.

No.	diameter	α			δ			α			δ			ϰ	γ
		M₁	M₂	M₃	M₁	M₂	M₃	m₁	m₂	m₃	m₁	m₂	m₃		
975	0r.534	+ 0r.016	+ 0r.014	− 0r.022	+ 0r.018	+ 0r.025	+ 0r.029	− 0″.022	+ 0″.004	+ 0″.011	+ 0″.021	− 0″.015	+ 0″.001	+ 5p.1	− 1p.3
976	0.534	+ 57	+ 65	− 42	+ 108	+ 74	− 29	− 2	+ 29	+ 1	+ 65	+ 9	− 19	+ 3.2	− 1.1
977	0.546	+ 49	− 32	− 78	+ 66	+ 42	+ 62	− 6	− 19	− 9	+ 44	− 7	+ 13	+ 5.3	− 1.0
978	0.618	+ 8	− 4	− 37	+ 26	+ 59	+ 22	− 25	− 5	+ 7	+ 26	0	0	+ 5.5	+ 0.2
979	0.623	+ 20	− 44	− 64	+ 46	+ 53	+ 10	− 20	− 24	− 6	+ 37	− 2	− 3	+ 3.4	+ 0.4
980	0.644	+ 40	− 21	− 41	+ 52	+ 61	− 6	− 9	− 14	+ 3	+ 40	+ 1	− 9	+ 4.0	+ 0.7
981	0.450	+ 26	− 82	− 70	+ 3	+ 16	+ 20	− 16	− 44	− 3	+ 16	− 22	+ 1	+ 6.4	+ 0.9
982	1.110	+ 36	− 2	− 46	+ 17	+ 19	− 17	− 11	− 4	0	+ 23	− 19	− 13	+ 3.4	+ 1.3
983	0.616	+ 79	− 24	− 62	+ 64	− 55	− 1	+ 10	− 15	− 6	+ 46	− 1	− 7	+ 3.1	+ 1.4
984	0.862	− 12	− 3	− 41	+ 48	+ 12	− 8	− 34	− 5	+ 1	+ 40	− 23	− 8	+ 3.0	+ 3.1
985	0.522	+ 67	+ 26	− 67	+ 37	+ 69	− 6	+ 5	+ 7	− 2	+ 34	+ 2	− 6	+ 6.5	+ 3.5
986	0.571	+ 50	+ 28	− 85	− 23	+ 78	+ 31	− 2	+ 8	− 8	+ 5	+ 6	+ 7	+ 6.7	+ 3.7
987	0.533	+ 34	+ 34	− 57	+ 56	+ 31	+ 12	− 10	+ 11	+ 2	+ 44	− 17	+ 1	+ 7.0	+ 4.1
988	0.629	+ 7	+ 12	− 137	+ 17	+ 41	+ 46	− 23	0	− 28	+ 25	− 11	+ 13	+ 5.8	+ 4.2
989	0.863	− 27	+ 22	− 75	+ 21	+ 49	+ 26	− 40	+ 5	− 6	+ 27	− 7	+ 6	+ 6.1	+ 4.4
990	0.930	− 5	− 2	− 78	− 30	+ 35	− 33	− 29	− 6	− 7	+ 3	− 15	− 15	+ 5.7	+ 5.1
991	0.817	− 7	− 9	− 88	− 2	+ 51	− 13	− 29	− 10	− 14	+ 18	− 6	− 8	+ 3.5	+ 5.4
992	1.405	− 23	− 11	− 31	− 22	+ 18	− 26	− 36	− 12	+ 9	+ 9	− 24	− 10	+ 5.7	+ 6.9
993	0.570	− 23	− 79	− 182	+ 1	+ 87	+ 130	− 36	− 45	− 43	+ 20	+ 9	+ 44	+ 5.7	+ 7.0
994	0.844	+ 22	− 1	− 40	+ 21	+ 70	+ 8	− 14	− 6	+ 1	+ 30	+ 2	+ 1	+ 2.5	+ 7.4
995	0.602	+ 34	− 8	− 42	− 12	+ 92	− 13	− 8	− 10	+ 4	+ 15	+ 12	− 6	+ 4.9	+ 7.7
996	0.553	+ 12	+ 6	− 78	+ 26	+ 78	− 66	− 18	− 4	− 7	+ 35	+ 3	− 23	+ 5.8	+ 8.9
997	0.693	+ 42	+ 34	− 85	0	+ 53	− 14	− 3	+ 10	− 11	+ 22	− 8	− 5	+ 5.0	+ 9.1
999	0.606	+ 30	+ 15	− 37	+ 43	+ 49	+ 25	− 9	0	+ 7	+ 43	− 11	+ 8	+ 5.9	+ 9.3
1000	0.606	+ 7	+ 10	− 77	+ 4	+ 42	− 3	− 20	− 2	− 6	+ 24	− 14	− 1	+ 6.4	+ 9.3
1001	0.585	+ 42	− 35	− 36	+ 27	+ 32	+ 5	− 2	− 24	+ 3	+ 37	− 18	+ 2	+ 2.8	+ 9.9
1003	0.623	+ 12	+ 9	− 86	+ 29	+ 63	+ 11	− 17	− 4	− 8	+ 38	− 5	+ 5	+ 7.1	+ 11.3
1004	0.651	− 6	+ 13	− 79	+ 15	+ 46	− 15	− 24	− 2	− 7	+ 18	− 14	+ 4	+ 6.4	+ 12.1
1005	0.606	− 16	+ 34	− 47	+ 3	+ 101	− 37	− 28	− 25	+ 4	+ 28	− 12	+ 12	+ 6.3	+ 12.8
1006	1.047	− 25	− 14	− 65	− 12	+ 44	− 24	− 32	− 16	− 2	+ 22	− 16	− 7	+ 5.9	+ 14.3
1009	1.018	+ 22	+ 5	− 64	− 43	+ 70	− 27	− 9	− 7	− 5	+ 8	− 3	− 7	+ 4.0	+ 15.2
1010	0.703	− 7	+ 17	− 73	− 14	+ 75	+ 18	− 21	− 2	− 5	+ 23	− 2	+ 9	+ 6.2	+ 16.0
1011	1.096	− 13	+ 41	− 55	− 34	+ 34	+ 15	− 24	+ 10	+ 1	+ 15	+ 22	+ 8	+ 6.3	+ 16.5
1013	0.582	− 14	− 23	− 97	− 75	+ 70	− 21	− 20	− 23	− 15	+ 2	− 8	− 4	+ 5.0	+ 21.7
1014	1.190	− 56	+ 33	− 27	− 58	+ 43	− 5	− 41	+ 4	+ 6	+ 11	− 20	+ 1	+ 3.0	+ 21.9
1015	0.546	+ 36	0		− 85	+ 118		+ 5	− 14		0	+ 14		+ 7.0	+ 24.2
1016	0.904	+ 12	+ 31	− 125	− 137	+ 38	− 15	− 5	− 0	− 22	− 24	− 26	− 2	+ 6.8	+ 25.2
1017	0.830	− 3	+ 21	− 82	− 128	+ 81	− 32	− 12	+ 3	− 12	− 16	− 5	− 9	+ 3.5	+ 26.9
1018	0.819	+ 10	+ 39	− 101	− 140	+ 47	− 26	− 5	+ 5	− 18	− 21	− 22	− 7	+ 4.2	+ 27.1⁵
1019	0.616	+ 14	+ 23	− 122	− 132	+ 96	+ 4	− 1	− 4	− 22	− 15	0	+ 3	+ 5.9	+ 29.1
1020	0.611	+ 51	+ 18	− 41	− 93	+ 100	+ 1	− 19	− 6	+ 1	+ 9	+ 2	0	+ 2.8	+ 31.1
1022	0.574	− 7	+ 36	− 108	− 139	+ 92	− 24	− 8	+ 1	− 21	− 11	− 3	− 9	+ 4.1	+ 33.2
1023	0.769	− 8	+ 23	− 83	− 164	+ 109	− 8	− 8	− 5	− 14	− 21	+ 5	− 4	+ 2.7	+ 33.7
1024	1.261	+ 660	+ 741	+ 852	− 617	− 377	− 586	+ 319	+ 343	+ 318	− 243	− 232	− 206	+ 5.8	+ 33.7
1025	0.644	− 20	+ 18	− 95	− 132	+ 75	+ 16	− 13	− 10	− 13	− 4	− 13	+ 3	+ 5.7	+ 34.9
1026	0.660	− 22	+ 32	+ 147	− 132	+ 109	+ 7	− 13	− 1	+ 67	− 1	+ 4	+ 1	+ 2.7	+ 36.2⁵
1027	0.906	− 17	+ 79	− 170	− 170	+ 110	− 8	− 3	+ 16	− 39	− 5	− 1	− 14	+ 6.2	+ 43.8
1028	0.764	− 10	+ 29	− 101	− 169	+ 86	− 37	− 0	− 8	− 17	− 4	− 12	− 24	+ 5.2	+ 44.3
1029	1.331	− 56	+ 29	− 103	− 229	+ 81	+ 44	− 21	− 7	− 21	− 31	− 15	+ 4	+ 3.1	+ 45.2
1031	0.661	+ 4	+ 42	− 102	− 215	+ 89	+ 22	+ 11	− 2	− 21	− 16	− 13	− 9	+ 2.7	+ 48.6
1032	0.874	− 4	+ 73	− 20	− 247	+ 55	− 117	+ 8	+ 13	+ 6	− 31	− 29	− 57	+ 1.8	+ 48.7
1033	0.841	− 22	+ 83	− 108	− 233	+ 86	− 41	− 0	+ 18	− 24	− 22	− 15	− 32	+ 1.8	+ 49.9
1035	0.614	− 7	+ 49	− 132	− 177	+ 93	− 4	+ 15	− 5	− 26	+ 21	− 16	− 30	+ 6.1	+ 57.2
	α = 2h 10m 29s to α = 2h 11m 11s.														
1036	0.631	+ 174	− 94	− 71	− 60	− 25	+ 409	+ 29	− 27	0	− 15	0	− 8	+ 10.2	− 58.8
1037	0.923	+ 288	+ 13	+ 51	+ 32	− 94	+ 301	+ 83	+ 25	+ 46	+ 29	− 35	− 42	+ 12.4	− 58.1
1038	1.692	+ 85	− 97	− 86	+ 29	− 80	+ 335	− 14	− 30	− 1	+ 25	− 33	− 15	+ 12.7	− 54.1
1040	0.668	+ 75	− 103	− 117	+ 4	− 6	+ 437	− 18	− 34	− 16	+ 10	+ 3	+ 31	+ 10.4	− 50.8
1041	0.655	+ 121	− 62	− 61	− 37	+ 17	+ 388	+ 5	− 15	+ 4	− 10	+ 13	+ 16	+ 11.3	− 50.5
1042	1.877	+ 241	+ 58	+ 100	+ 71	+ 7	+ 321	+ 65	+ 42	+ 58	+ 40	+ 6	+ 4	+ 9.3	− 46.9
1045	0.436	+ 142	− 11	− 58	+ 29	+ 3	+ 258	+ 20	+ 5	+ 5	+ 17	− 3	+ 10	+ 10.3	− 38.0⁰

No.	B. D. or Br.—St.	Mag.	α 1900.0	δ	α μ₁	α μ₂	α μ₃	δ μ₁	δ μ₂	δ μ₃	μ″α	μ″δ
975	380a	13.1	2ʰ 11ᵐ 26ˢ	56° 41′.0	− 0″.018	+ 0″.003	+ 0″.011	+ 0″.012	− 0″.012	+ 0″.003	+ 0″.002	+ 0″.001
976	357	13.1	11 40	40.8	+ 2	+ 28	+ 1	+ 56	+ 12	− 16	+ 8	+ 9
977	303	13.0	11 25	40.6	− 2	− 20	− 9	+ 35	− 4	+ 15	− 10	+ 15
978	1316	12.4	11 24	39.4	− 21	− 6	+ 7	+ 17	− 3	+ 2	− 3	+ 6
979	351	12.3	11 38	39.2	− 16	− 25	− 6	+ 28	+ 1	− 0	− 13	+ 7
980	340	12.2	11 35	39.0	− 5	− 15	+ 3	+ 31	+ 4	− 6	− 3	+ 6
981	274	13.9	11 17	38.8	− 12	− 45	− 3	+ 7	− 19	+ 3‡	− 16	− 1
982	56°.504 †	9.5	11 39	38.3	− 7	− 5	− 0	+ 14	− 16	− 10	− 3	− 5
983	361	12.4	11 41	38.3	+ 14	− 16	− 6	+ 37	+ 2	− 4	− 3	+ 8
984	56°.505 †	10.7	11 42	36.6	− 30	− 6	+ 1	+ 31	− 20	− 5	− 8	0
985	271	13.2	11 16	36.1	+ 9	+ 6‡	− 2	+ 25	+ 5	− 4	+ 3	+ 5
986	268	12.8	11 15	36.0	+ 2	+ 7	− 8	− 5	+ 9	+ 9	− 2	+ 5
987	260	13.1	11 13	35.5	− 6	+ 11	+ 2‡	+ 34	− 14	+ 3	+ 2	+ 6
988	287	12.3	11 21	35.4	− 19	− 1	− 28	+ 16	− 8	+ 15	− 19	+ 9
989	56°.495 †	10.7	11 19	35.3	− 36	+ 4	− 6	+ 18	− 4	+ 8	− 11	+ 7
990	56°.497 †	10.3	11 22	34.6	− 25	− 7	− 7	− 6	− 12	− 13	− 11	11
991	347	11.0	11 38	34.3	− 26	− 11	− 14	+ 9	− 3	− 5	− 16	− 1
992	56°.498 †	8.3	11 22	32.8	− 33	− 12	+ 9	− 1	− 21	− 7	− 7	− 9
993	294	12.8	11 22	32.7	− 33‡	− 45	− 43‡	+ 10‡	+ 12	+ 47‡	− 41	+ 29
994	376	10.8	11 45	32.3	− 11	− 7	+ 1	+ 21	+ 5	+ 4	− 4	+ 8
995	316	12.5	11 28	32.0	− 5	− 11	+ 4	+ 5	− 15	− 3	− 2	+ 3
996	288	12.9	11 21	30.9	− 15‡	− 4	− 7	+ 25	+ 6	− 20	− 8	− 2
997	1318	11.8	11 27	30.6	− 0	+ 10	− 11	+ 12	− 5	− 2	− 3	+ 1
999	286	12.5	11 21	30.4	− 6	− 0	+ 7	+ 33	− 9	+ 11	+ 2	+ 11
1000	1314	12.5	11 17	30.3	− 17	− 2	− 6	+ 14	− 12	+ 2	− 8	+ 1
1001	368	12.7	11 43	29.8	+ 1	− 25	+ 3	+ 28	− 15	+ 5	− 4	+ 6
1003	259	12.3	11 13	28.4	− 14	− 4	− 8	+ 28	− 3	+ 8	− 8	+ 10
1004	273	12.1	11 17	27.6	− 21	− 2	− 7	+ 8	− 12	− 1	− 9	− 1
1005	279	12.5	11 18	27.0	− 25	− 25	+ 4	+ 18	+ 14	− 9	− 10	+ 3
1006	56°.494 †	9.8	11 21	25.4	− 29	− 16	− 2	+ 12	− 14	− 4	− 12	− 2
1009	56°.503 †	9.9	11 35	24.5	− 6	− 7	− 5	− 2	− 1	− 4	− 6	− 3
1010	281	11.7	11 19	23.8	− 18	− 2	− 5	+ 13	0	+ 12	− 7	+ 9
1011	56°.493 †	9.5	11 19	23.2	− 21	+ 10	+ 1	+ 5	− 20	+ 11	− 2	+ 2
1013	313	12.7	11 27	18.2	− 18	− 23	− 15	− 8	− 6	− 0	− 18	− 3
1014	56°.507 †	9.1	11 42	17.9	− 39	+ 4	+ 6	+ 1	− 18	+ 5	− 6	− 2
1015		13.0	11 13	15.6	+ 7	− 14		− 11	+ 16‡		− 3	+ 2
1016	56°.490 †	10.5	11 15	14.6	− 3	0	− 22	− 35	− 24	+ 2	− 12	− 14
1017	350	10.9	11 38	13.0	− 11	− 3	− 12	− 27	− 3	− 4	− 10	− 9
1018	337	11.0	11 33	12.7	− 4	+ 5	− 18	− 32	− 20	− 2	− 9	− 14
1019	291	12.4	11 21	10.7	− 0	− 4	− 22	− 26	+ 1	+ 8	− 12	− 2
1020		12.4	11 43	8.7	+ 20	− 6	+ 1	− 2	+ 3‡	+ 5	+ 4	+ 3
1022	339	12.7	11 34	6.6	− 7	+ 1	− 21	− 22	− 2	− 4	− 12	− 8
1023	373	11.3	11 44	6.2	− 8	− 5	− 14	− 32	+ 6	+ 2	− 10	− 5
1024	55°.570 †	8.9	11 21	6.2	+ 319	+ 343	+ 318	− 254	− 231	− 201	+ 324	− 222
1025	295	12.2	11 22	5.0	− 13	− 10	− 13	− 16	− 12	+ 8	− 12	− 3
1026	372	12.0	11 44	3.6	− 13	− 1	+ 67	− 12	+ 5	+ 5	+ 30	+ 1
1027	55°.569 †	10.5	11 20	55° 56′.2	− 5	+ 17	− 40	− 17	− 1	− 7	− 17	− 8
1028	308	11.3	11 26	55.6	− 2	− 7	− 18	− 16	− 12	− 16	− 11	− 15
1029	55°.571 †	8.6	11 41	54.8	− 23	− 7	− 22	− 43	− 15	+ 12	− 18	− 8
1031	1925	12.0	11 44	51.4	+ 8	− 1	− 22	− 29‡	− 13	0‡	− 9	− 10
1032	55°.572 †	10.6	11 50	51.3	+ 5	+ 13	+ 5	− 44‡	− 29	− 48‡	+ 7	− 42
1033	55°.573	10.8	11 51	50.1	− 3	+ 18	− 25	− 35‡	− 15	− 23‡	− 9	− 24
1035		12.4	11 20	42.8	+ 10‡	− 4	− 27‡	+ 7‡	− 16‡	− 19‡	− 12	− 12

α = 2ʰ 10ᵐ 29ˢ to α = 2ʰ 11ᵐ 11ˢ.

No.	B. D. or Br.—St.	Mag.	α 1900.0	δ	α μ₁	α μ₂	α μ₃	δ μ₁	δ μ₂	δ μ₃	μ″α	μ″δ
1036		12.3	2ʰ 10ᵐ 48ˢ	57° 38′.1	+ 25‡	− 28	− 2	− 26‡	+ 5‡	+ 3‡	− 2	− 4
1037		10.4	10 32	37.4	+ 79	+ 24	+ 44	+ 18‡	− 31	− 31‡	+ 48	− 19
1038	57°.533 †	7.4	10 29	33.5	− 16	− 31	− 3	+ 15	− 29	− 6	− 13	− 6
1040	182	12.0	10 47	30.2	− 20	− 35	− 18	0‡	+ 7	+ 40	− 23	+ 22
1041	170a	12.1	10 40	29.8	+ 3	− 16	+ 2	− 20‡	+ 17	+ 25	− 2	+ 12
1042	57°.535 †	7.0	10 55	26.2	+ 64	+ 41	+ 57	+ 30	+ 10	+ 12	+ 55	+ 16
1045	1876	14.0	10 48	17.4	+ 21	+ 4	+ 4	+ 8	+ 1	+ 16	+ 8	+ 10

Reduction to absolute P.M.: Δμ″α = − 0″.006; Δμ″δ = + 0″.007.

No.	diameter	α			δ			α			δ			z	γ
		M₁	M₂	M₃	M₁	M₂	M₃	m₁	m₂	m₃	m₁	m₂	m₃		
1047	0r.987	+ 0r.051	− 0r.026	− 0r.044	+ 0r.031	+ 0r.007	+ 0r.161	− 0″.022	− 0″.004	+ 0″.007	+ 0″.016	− 0″.003	− 0″.009	+ 8p.1	− 32p.4
1050	0 .623	+ 112	− 74	− 98	0	+ 21	+ 178	+ 7	− 28	− 6	+ 1	0	− 2	+ 11.7	− 31.7
1051	0 .696	+ 60	− 26	− 82	+ 12	+ 21	+ 212	− 18	− 4	− 5	+ 7	+ 1	+ 12	+ 9.1	− 31.0
1055	0 .741	+ 89	− 35	− 42	− 4	+ 64	+ 202	− 1	− 11	+ 12	− 1	+ 17	+ 23	+ 10.6	− 25.3
1056	0 .553	+ 100	+ 56	− 6	− 8	− 33	+ 156	+ 5	+ 34	+ 21	− 3	− 29	+ 7	+ 8.5	− 24.9
1057	1 .896	+ 13	− 51	− 73	+ 14	+ 1	+ 124	− 37	− 19	− 2	+ 8	− 13	− 2	+ 8.4	− 23.7
1058	0 .781	+ 82	− 44	− 60	+ 16	+ 36	+ 153	− 2	− 17	+ 3	+ 10	+ 2	+ 14	+ 9.1	− 21.0
1059	0 .629	+ 78	− 22	− 52	+ 11	+ 33	+ 166	− 3	− 6	+ 5	+ 7	+ 1	+ 19	+ 8.2	− 20.9
1060	0 .788	+ 41	− 33	− 54	+ 12	+ 11	+ 117	− 20	− 14	+ 8	+ 9	− 14	+ 9	+ 10.5	− 16.9⁵
1061	1 .023	+ 56	− 7	− 68	+ 7	+ 51	+ 105	− 13	− 1	+ 3	+ 7	+ 5	+ 5	+ 10.6	− 16.9
1062	0 .539	+ 103	− 12	− 55	+ 100	+ 10	+ 103	+ 11	− 4	+ 9	+ 52	− 16	+ 8	+ 11.6	− 15.2
1063	0 .595	+ 180	− 50	− 61	+ 79	+ 45	+ 37	+ 53	− 25	+ 2	+ 45	− 1	− 6	+ 8.1	− 9.3
1064	0 .716	+ 61	+ 37	+ 20	− 15	+ 6	− 42	− 5	+ 17	+ 36	0	− 23	− 32	+ 11.5	− 7.8
1065	0 .631	+ 10	− 53	− 72	+ 22	+ 31	− 5	− 29	− 28	0	+ 20	− 11	− 16	+ 9.5	− 5.7
1066	1 .162	− 3	− 38	− 51	+ 20	+ 31	+ 18	− 34	− 21	+ 12	+ 19	− 13	− 6	+ 11.8	− 4.5
1067	0 .652	+ 68	− 61	− 85	+ 61	+ 4	+ 9	+ 1	− 33	− 2	+ 39	− 26	− 9	+ 10.8	− 4.0
1068	0 .685	+ 24	− 20	− 64	+ 14	+ 45	− 18	− 20	− 13	+ 5	+ 17	− 6	− 17	+ 10.1	− 3.3
1069	0 .648	+ 109	+ 27	+ 31	+ 15	+ 56	+ 39	+ 21	+ 10	+ 38	+ 18	− 1	+ 3	+ 10.0	− 2.8
1071	0 .551	+ 104	− 11	− 60	+ 17	+ 11	− 6	+ 20	− 9	+ 2	+ 20	− 23	− 12	+ 7.8	− 1.8
1072	0 .536	+ 55	− 11	− 28	+ 34	+ 41	+ 12	− 4	− 9	+ 18	+ 28	− 9	− 5	+ 11.2	− 1.8
1073	0 .673	− 10	− 7	− 66	− 2	+ 59	+ 6	− 35	− 8	+ 4	+ 11	0	− 7	+ 10.5	− 1.5
1074	0 .570	+ 35	− 24	− 38	+ 51	+ 25	+ 15	− 13	− 15	+ 10	+ 37	− 16	− 3	+ 8.0	− 0.9
1075	0 .720	− 13	− 23	− 50	+ 6	+ 56	+ 32	− 36	− 15	+ 7	+ 16	− 2	+ 3	+ 9.3	− 0.2
1076	0 .502	+ 132	− 39	− 66	+ 66	+ 71	+ 13	+ 35	− 24	+ 4	+ 45	+ 4	+ 3	+ 9.9	0.0
1077	0 .674	− 1	− 12	− 70	+ 5	+ 78	− 22	− 29	− 11	+ 3	+ 12	+ 7	− 14	+ 11.2	+ 1.3
1078	0 .770	+ 43	+ 14	− 82	+ 28	+ 46	+ 21	− 7	0	+ 1	+ 28	− 10	+ 2	+ 11.7	+ 1.8
1078*			+ 43	− 22		+ 37	+ 29		+ 15	+ 21		− 14	+ 5	+ 11.6	+ 1.9
1079	1 .329	− 11	− 27	− 47	+ 10	+ 19	+ 13	− 34	− 19	+ 10	+ 9	− 22	− 1	+ 10.3	+ 2.1
1080	0 .559	+ 44	− 27	− 109	+ 42	+ 47	+ 4	− 7	− 19	+ 10	+ 35	− 9	− 4	+ 10.8	+ 2.2
1081	0 .607	+ 24	− 11	− 109	+ 32	+ 55	− 7	− 17	− 11	− 12	+ 30	− 4	− 8	+ 9.4	+ 2.3
1082	0 .947	0	− 4	− 69	+ 33	+ 11	+ 20	− 28	− 8	+ 6	+ 30	− 27	+ 1	+ 12.3	+ 2.3
1083	0 .602	+ 7	− 18	− 36	+ 12	+ 59	+ 2	− 24	− 15	+ 15	+ 21	− 3	+ 4	+ 10.9	+ 2.7
1084	0 .594	+ 94	+ 75	− 36	+ 50	+ 122	+ 3	+ 19	+ 31	+ 10	+ 41	+ 27	+ 2	+ 8.3	+ 3.7
1085	0 .755	− 2	− 9	− 75	+ 20	+ 55	− 3	− 27	− 12	+ 4	+ 26	− 7	− 4	+ 12.0	+ 4.5
1086	0 .506	+ 29	+ 11	− 136	+ 128	+ 39	− 26	− 12	− 1	− 22	+ 80	− 14	− 13	+ 9.5	+ 4.9⁵
1087	0 .522	+ 34	− 31	− 76	+ 11	+ 16	− 16	− 9	− 23	+ 3	+ 22	− 26	− 9	+ 11.7	+ 5.3
1088	0 .471	+ 22	+ 29	− 64	+ 8	+ 58	− 15	− 14	+ 7	+ 2	+ 23	− 6	− 6	+ 8.5	+ 6.7
1089	0 .718	+ 78	− 1	− 59	+ 15	+ 69	+ 9	+ 14	− 8	+ 1	+ 28	0	+ 2	+ 7.4	+ 7.6
1090	0 .468	+ 15	− 17	− 41	+ 87	+ 57	+ 8	− 17	− 16	+ 10	+ 63	− 7	+ 1	+ 9.0	+ 8.1
1091	0 .510	− 3	− 21	− 52	+ 8	+ 95	+ 15	− 25	− 18	+ 5	+ 24	+ 12	+ 4	+ 8.0	+ 8.2
1092	0 .533	− 2	− 17	− 41	+ 29	+ 79	+ 14	− 25	− 16	+ 10	+ 35	+ 4	+ 6	+ 9.1	+ 8.3⁵
1093	0 .523	− 17	− 9	− 42	+ 19	+ 53	+ 31	− 32	− 13	+ 10	+ 31	− 10	+ 11	+ 8.7	+ 8.9⁵
1094	0 .857	− 10	− 14	− 131	+ 15	+ 52	+ 14	− 27	− 17	+ 18	+ 30	− 12	+ 5	+ 10.6	+ 10.5
1095	0 .588	+ 24	+ 23	− 72	− 17	+ 77	− 17	− 10	+ 2	0	+ 15	+ 1	+ 5	+ 8.7	+ 10.8
1096	0 .672	+ 26	− 37	− 72	+ 13	+ 76	+ 31	− 9	− 27	+ 1	+ 30	0	+ 12	+ 9.6	+ 11.0
1097	0 .592	− 8	− 7	− 101	+ 15	+ 85	+ 5	− 25	− 12	− 13	+ 33	+ 5	+ 3	+ 7.4	+ 11.9
1098	0 .536	+ 59	+ 7	− 69	+ 80	+ 68	+ 1	+ 8	+ 6	+ 1	+ 64	− 4	+ 2	+ 9.1	+ 12.4
1099	0 .589	+ 53	− 77	− 100	+ 18	+ 77	+ 3	+ 5	− 47	− 12	+ 36	0	+ 2	+ 8.3	+ 12.8
1100	1 .106	− 33	− 4	− 78	+ 13	+ 75	− 3	− 36	− 13	+ 1	+ 33	− 2	+ 1	+ 10.9	+ 13.6
1101	0 .686	0	+ 37	− 72	+ 10	+ 86	− 51	− 20	+ 8	− 2	+ 32	+ 4	− 16	+ 8.3	+ 14.2
1102	0 .702	+ 15	+ 32	− 109	− 33	+ 66	− 25	− 11	+ 4	− 14	+ 14	− 7	− 6	+ 8.5	+ 16.1
1103	0 .548	+ 4	+ 33	− 69	− 22	+ 80	+ 54	− 16	+ 4	+ 3	+ 19	− 1	+ 22	+ 11.1	+ 16.2
1104	0 .511	+ 38	+ 72	− 59	− 19	+ 101	− 2	0	+ 24	+ 3	+ 21	+ 10	+ 2	+ 7.8	+ 16.4
1105	0 .792	− 8	+ 25	− 77	+ 16	+ 65	+ 1	− 22	0	− 2	+ 39	− 8	+ 3	+ 9.3	+ 16.5
1106	0 .572	+ 91	− 20	− 167	− 24	+ 143	+ 6	+ 27	− 23	− 28	+ 19	+ 29	+ 5	+ 11.7	+ 16.8
1107	0 .585	+ 66	+ 70	− 55	62	+ 71	0	+ 16	+ 22	+ 4	+ 2	− 6	+ 3	+ 8.3	+ 18.2
1108	0 .494	+ 37	+ 47	− 129	− 71	+ 45	− 21	+ 5	+ 8	+ 15	+ 2	− 22	− 4	+ 11.7	+ 21.5
1110	0 .690	+ 18	+ 11	− 105	− 82	+ 102	− 11	− 2	− 10	− 13	+ 3	+ 5	− 1	+ 8.5	+ 24.8
1111	0 .511	+ 41	+ 70	− 114	− 21	+ 93	− 1	+ 9	+ 19	− 15	+ 33	0	+ 3	+ 8.8	+ 25.3
1112	0 .588	+ 18	+ 43	− 113	− 118	+ 68	− 8	− 1	+ 6	− 17	− 11	− 12	− 1	+ 7.4	+ 27.2

No.	B. D. or Br.—St.	Mag.	α (1900.0)	δ (1900.0)	α μ₁	α μ₂	α μ₃	δ μ₁	δ μ₂	δ μ₃	μ''_α	μ''_δ
1047	225	10.1	2ʰ 11ᵐ 4ˢ	57° 11′.8	−0″.020	−0″.005	+0″.006	+0″.007	+0″.001	−0″.004	−0″.003	0″.000
1050	162	12.3	10 38	11.1	+9	−29	−7	−8	+4	+2	−8	0
1051	205	11.8	10 57	10.4	−16	−5	−6	−2	+5	+16	−8	+9
1055	180	11.4	10 46	4.7	+2	−12	+11	−10	+21	+27	+3	+16
1056	215	12.9	11 1	4.3	+8	+33	+20	−12	−25	+11	+20	−4
1057	56°.486 †	6.9	11 2	3.2	−34	−20	−3	−1	−9	+2	−15	−1
1058	206	11.2	10 57	0.6	+1	−18	+2	+1	+6	+17	−3	+10
1059	222	12.3	11 3	0.6	0	−7	+4	−2	+5	+22	0	+12
1060	184	11.1	10 47	56° 56.4	−16	−15	+7	0	−11	+12	−4	+3
1061	56°.483 †	9.9	10 46	56.4	−9	−2	+2	−2	+8	+8	−2	+5
1062	164	13.1	10 39	54.7	+15	−5	+8	+43	−13	+10	+6	+12
1063	229	12.6	11 5	49.0	+57	−26	+2	−36	+2	−4	+9	+7
1064	170	11.6	10 40	47.3	−1	+16	+36	−9	−20	−30	+22	−22
1065	198	12.3	10 54	45.3	−25	−29	0	+11	−8	−14	−13	−6
1066	56°.482 †	9.3	10 38	44.1	−30	−21	+12	+10	−10	−4	−7	−2
1067	178	12.1	10 45	43.6	+5	−33	−2	+30	−23	−7	−8	−2
1068	190	11.8	10 51	42.9	−16	−13	+5	+8	−3	−15	−5	−6
1069	191	12.1	10 51	42.5	+25	+10	+38	+9	+2	+5	+28	+5
1071	236	12.9	11 7	41.5	+24	−10	+2	+11	−20	−10	+4	−7
1072	171	13.1	10 43	41.4	0	−9	+18	+19	−6	−3	+7	+2
1073	186	11.9	10 48	41.1	−31	−8	+4	+2	+3	−5	−8	−1
1074	229a	12.8	11 5	40.6	−9	−16	+10	+28	−13	−1	−1	+3
1075	203	11.6	10 56	39.9	−32	−15	+7	+7	+1	+5	−8	+4
1076	193	13.4	10 52	39.6	+39	−24	+4	+36	+7	−1‡	+6	+10
1077	172	11.9	10 43	38.3	−25	−11	+3	+2	+10	−12	−7	−3
1078	165	11.2	10 39	37.9	−3	0	+1	+18	−8	+4	0	+4
1078*	165a		10 39	37.8		+15	+21		−12	+7	+19	+1
1079	56°.485 †	8.6	10 49	37.6	−30	−19	+10	−1	−19	+1	−7	−4
1080	179	12.9	10 46	37.5	−3	−19	−10	+25	−7	−2	−10	+3
1081	201	12.5	10 55	37.3	−13	−11	−12	+20	−1	−6	−12	+2
1082	56°.481 †	10.3	10 35	37.3	−24	−8	+6	+20	−25	+2	−5	0
1083	175	12.5	10 45	36.9	−20	−15	+15	+11	−1	−2	−1	+1
1084	223	12.6	11 3	36.0	+23	+31	+10	+31	+30‡	0	+18	+15
1085	159	11.3	10 37	35.2	−23	−12	+4	+16	−5	−2	−7	+2
1086	200	13.4	10 55	34.7	−8	−1	−22	+70	−12	−11	−13	+9
1087	166	13.2	10 39	34.4	−5	−23	+3	+12	−24	−7	−5	−6
1088	219	13.7	11 2	33.0	−10	+7	+2	+13	−4	−4	0	0
1089	246	11.6	11 10	22.1	+18	−8	+1	+18	+2	+4	+3	+7
1090	209	13.7	10 58	31.6	−13	−16	+10	+53	−5	+3	−2	+13
1091	230	13.3	11 5	31.5	−21	−18	+5	+14	+14	+6	−7	+10
1092	207	13.1	10 57	31.3	−21	−16	+10	+25	+6	−4	−4	+6
1093	212	13.2	11 1	30.7	−29	−13	+10	+21	−8	−9	−5	−1
1094	183	10.7	10 47	29.2	−24	−17	−18	+20	−10	+7	−19	+6
1095	213	12.6	11 1	29.0	−7	+2	0	+5	+3	−3	−1	0
1096	197	11.9	10 54	28.7	−6	−27	+1	+20	+2	+14	−8	+12
1097	244	12.6	11 10	27.8	−22	−12	−13	+23	+7	+5	−15	+10
1098	208	13.1	10 58	27.3	+11	−6	+1	+54	−2	+4	+2	+15
1099	226	12.6	11 4	26.9	+8	−47	−12	+26	+2	+4	−16	+9
1100	56°.484 †	9.5	10 45	26.2	−33	−13	+1	+23	0	+3	−11	+7
1101	224	11.8	11 4	25.5	−17	+8	−2	+22	+6	−13	−3	0
1102	220	11.7	11 2	23.5	−8	+4	−14	+4	−5	−3	−8	−2
1103	173	13.0	10 44	23.5	−13	+4	+3	+9	+1	+24	−1	+14
1104	237	13.3	11 7	23.3	+3	+24	+3	+11	+12	+5	+8	+8
1105	204	11.1	10 57	23.2	−19	0	−2	+29	−6	+6	−6	+9
1106	167	12.8	10 39	23.0	+30‡	−23	−28	+9	+31	+7	−12	+13
1107	227	12.7	11 4	21.5	+19	+22	+4	−8	−4	+6	+12	0
1108	169	13.5	10 39	18.3	+8	+8	−15	−9	−21	−1	−3	−8
1110	1306	11.8	11 2	15.0	0	−10	−13	−8	+6	+2	−9	+1
1111	211	13.3	11 0	14.4	+11	+19	−15	+22	+1	+6	0	+9
1112	247	12.6	11 10	12.6	+1	+6	−17	−22	−11	+3	−7	−7

Reduction to absolute P.M.: $\Delta \mu''_\alpha = -0''.006$; $\Delta \mu''_\delta = +0''.007$.

No.	diameter	α			δ			α			δ			ϰ	γ
		M_1	M_2	M_3	M_1	M_2	M_3	m_1	m_2	m_3	m_1	m_2	m_3		
1113	0r.531	+ 0r.009	+ 0r.045	− 0r.047	− 0r.044	+ 0r.097	+ 0r.018	− 0″.003	+ 0″.004	+ 0″.011	+ 0″.026	0″.000	+ 0″.008	+ 10p.5	+ 28p.2⁵
1114	0 .660	+ 14	+ 23	− 97	− 122	+ 74	− 15	− 1	− 5	− 10	− 10	− 11	− 4	+ 7.9	+ 28.8
1115	1 .479	− 15	+ 21	− 66	− 160	+ 56	+ 46	− 15	− 8	+ 5	− 30	− 20	+ 17	+ 10.6	+ 29.2
1117	0 .652	+ 29	− 2	− 124	− 145	+ 99	− 54	+ 8	− 19	− 15	− 20	− 0	− 18	+ 10.7	+ 29.7
1118	0 .523	− 3	+ 56	− 124	− 121	+ 98	+ 4	− 9	+ 11	− 21	− 8	− 0	+ 2	+ 7.3	30.3⁵
1119	0 .522	− 3	+ 6	− 105	− 96	+ 111	− 13	− 7	− 15	− 13	+ 6	+ 6	− 4	+ 7.7	+ 30.7
1120	0 .509	− 9	− 28	− 121	− 143	+ 45	− 29	− 10	− 32	− 19	− 17	− 26	− 10	+ 7.7	+ 30.8
1121	0 .508	+ 62	− 14	− 146	− 168	− 117	+ 59	+ 25	− 12	− 24	− 30	+ 8	+ 21	+ 9.8	+ 30.9
1122	0 .462	− 2	+ 23	− 129	− 102	− 108	+ 37	− 6	− 8	− 18	+ 2	+ 4	+ 13	+ 9.8	+ 31.4
1123	0 .695	− 29	+ 43	− 131	− 152	+ 96	− 8	− 19	+ 1	− 18	− 20	− 2	− 3	+ 9.9⁵	+ 31.8
1124	0 .570	+ 21	+ 22	− 123	− 112	+ 92	− 7	+ 7	− 10	− 16	+ 3	− 5	− 3	+ 10.2	+ 34.2
1125	1 .303	− 99	− 26	− 210	− 206	+ 76	+ 15	− 47	− 34	− 50	− 33	− 15	− 0	+ 8.0	+ 38.9⁵
1126	0 .458	− 5	+ 30	− 174	− 99	+ 133	− 91	− 0	− 8	− 34	+ 19	+ 12	− 37	+ 10.1	+ 39.1
1127	0 .568	− 2	− 10	− 212	− 114	+ 93	− 18	+ 4	− 30	− 46	+ 17	− 9	− 14	+ 11.0	+ 42.2
1129	0 .569	− 202	− 158	− 372		+ 22	− 148	− 84	− 105	− 107		− 48	− 72	+ 8.1	+ 51.8
1130	0 .788	− 19	+ 31	− 178	− 198	+ 119	− 0	+ 5	− 13	− 38	− 1	− 1	− 21	+ 8.4	+ 52.1
1131	0 .528	− 25	+ 23		− 111	− 82		+ 2	− 17		+ 41	− 19		+ 8.3	+ 52.2
1132	0 .740	− 46	+ 77	− 106	− 229	− 103	− 29	− 7	+ 9	− 14	− 14	− 9	− 32	+ 7.8	+ 52.7
1133	0 .460	+ 29	− 0	− 177	− 94	+ 160	+ 13	+ 31	− 36	− 34	+ 51	+ 17	− 18	+ 10.7	+ 53.4
1134	1 .273	− 105	+ 28	− 176	− 192	+ 168	− 36	− 35	− 16	− 37	+ 6	+ 22	− 36	+ 8.5	+ 53.9
1135	0 .683	+ 65	+ 33	− 199	− 166	+ 167	+ 23	+ 50	− 14	− 46	+ 23	+ 20	− 19	+ 7.9	+ 55.8
1136	0 .622	− 13	+ 108	− 255	− 129	+ 146	+ 52	+ 16	+ 20	− 62	+ 49	+ 8	− 15	+ 9.8	+ 59.0
	ϰ = 2ʰ 9ᵐ 53ˢ to ϰ = 2ʰ 10ᵐ 39ˢ.														
1137	0 .886	+ 264	− 55	− 36	+ 62	+ 48	+ 377	+ 70	− 6	+ 20	+ 48	+ 34	− 28	+ 15.4	− 61.1
1138	0 .714	+ 222	− 83	− 116	+ 32	− 42	+ 344	+ 50	− 20	− 8	+ 32	− 11	− 37	+ 15.5	− 60.5
1140	0 .674	+ 144	− 49	− 114	− 2	+ 53	+ 256	+ 17	− 11	− 2	+ 3	+ 21	− 6	+ 17.7	− 42.7
1141	0 .650	+ 210	− 4	− 24	− 1	+ 5	+ 295	+ 50	+ 10	+ 28	+ 3	− 2	+ 11	+ 16.6	− 41.9
1142	0 .611	+ 159	− 17	− 95	− 16	+ 26	+ 265	+ 26	+ 3	+ 2	− 5	+ 7	+ 7	+ 15.9	− 40.0⁵
1143	0 .631	+ 92	− 68	− 19	− 34	− 18	+ 262	− 5	− 22	+ 24	− 14	+ 15	+ 11	+ 13.8	− 37.7
1144	0 .554	+ 170	− 28	− 45	− 11	− 10	+ 235	− 33	− 3	+ 20	− 3	+ 13	+ 4	+ 16.3	− 36.7
1145	0 .451	+ 167	− 29	− 71	− 10	+ 86	+ 235	+ 32	− 4	+ 6	− 3	+ 34	+ 10	+ 14.2	− 35.0
1146	0 .654	+ 58	− 10	− 78	− 12	− 1	+ 216	− 20	+ 3	+ 4	− 4	− 11	+ 12	+ 14.3	− 32.0
1148	0 .665	+ 78	− 68	− 82	+ 17	− 6	+ 219	− 7	− 28	+ 8	+ 9	− 19	+ 29	+ 16.8	− 24.8
1150	0 .752	+ 69	− 10	− 79	+ 21	+ 7	+ 120	− 9	− 1	+ 8	− 8	+ 15	+ 2	+ 16.3	− 21.6
1151	0 .572	+ 91	− 45	− 81	+ 14	+ 23	+ 176	+ 2	− 19	+ 3	− 5	− 7	+ 22	+ 14.3	− 21.1
1152	0 .770	+ 68	− 5	− 50	+ 18	+ 5	+ 147	− 9	− 0	+ 21	+ 10	− 17	+ 13	+ 17.4	− 21.1
1153	0 .779	+ 78	− 31	− 68	+ 18	+ 34	+ 171	− 3	− 12	+ 9	+ 11	− 3	+ 24	+ 14.6	− 19.5
1154	1 .498	+ 68	+ 23	− 24	+ 6	− 61	− 8	+ 5	+ 12	+ 23	+ 7	− 52	− 30	+ 13.3	− 14.6
1155	0 .891	− 11	− 71	− 157	+ 27	− 10	− 121	− 43	− 34	− 17	− 9	− 19	− 67	+ 16.9⁵	− 13.4
1156	0 .469	+ 93	− 9	− 122	+ 68	+ 47	− 36	+ 8	− 5	− 8	+ 38	− 1	− 37	+ 15.2⁵	− 12.6
1157	0 .636	+ 68	− 58	− 147	+ 2	+ 40	− 73	+ 4	− 29	− 19	+ 6	− 5	− 49	+ 14.1⁵	− 12.2
1158	0 .534	+ 54	− 21	− 124	+ 57	+ 46	− 43	− 11	− 11	− 12	+ 33	− 1	− 38	+ 12.8	− 12.1
1159	0 .705	+ 35	− 48	− 128	+ 5	− 20	− 38	− 20	− 24	− 10	+ 7	− 15	− 36	+ 14.9⁵	− 11.9
1160	0 .607	+ 33	+ 10	− 74	− 34	− 30	− 5	− 20	+ 4	+ 6	− 22	− 10	− 22	+ 12.9	− 10.4
1162	0 .638	+ 4	− 7	− 70	− 14	− 64	+ 15	− 32	− 7	+ 8	+ 15	+ 3	− 9	+ 14.1	− 5.9
1163	0 .579	+ 49	− 29	− 116	− 21	+ 50	+ 16	− 9	− 18	− 4	− 2	− 4	− 8	+ 15.7	− 5.8
1164	1 .215	− 13	− 20	− 140	− 4	+ 32	+ 49	− 23	− 17	− 10	+ 16	+ 17	+ 10	+ 17.4	− 0.3
1165	0 .571	− 29	− 39	− 72	+ 16	+ 82	+ 14	− 15	− 25	+ 8	+ 20	+ 8	− 2	+ 14.3	− 0.1
1166	0 .620	+ 404	+ 320	+ 353	− 4	+ 14	+ 25	+ 168	+ 150	+ 155	+ 16	− 25	− 15	+ 12.8	+ 0.7
1167	0 .672	− 25	− 10	− 122	− 10	+ 72	− 41	− 41	− 11	− 10	+ 19	+ 2	− 21	+ 13.6	+ 0.8
1168	0 .470	+ 18	− 19	− 56	− 29	+ 33	+ 30	− 20	− 16	+ 13	− 28	− 17	+ 4	+ 14.3	+ 1.1⁵
1169	0 .711	− 24	− 47	− 124	+ 20	+ 82	+ 18	− 17	− 29	− 10	+ 23	+ 7	− 0	+ 14.2	+ 1.3
1170	0 .916	− 32	− 27	− 82	+ 1	+ 72	+ 59	− 43	− 21	+ 10	+ 14	+ 1	+ 15	+ 17.0	+ 1.5
1171	0 .470	− 56	+ 7	− 65	+ 63	− 101	+ 7	− 1	− 3	+ 10	+ 45	+ 17	− 3	+ 13.5	+ 1.9
1173	9 .498	+ 44	+ 12	− 72	+ 84	− 19	+ 19	− 6	− 1	+ 7	+ 56	− 24	+ 2	+ 13.5	+ 3.1⁵
1174	0 .502	− 14	+ 5	− 110	− 14	+ 61	+ 23	− 34	− 5	− 6	+ 8	− 3	+ 3	+ 13.3	+ 3.2
1175	0 .518	+ 95	+ 15	− 130	+ 142	+ 83	+ 14	+ 20	− 1	− 10	+ 85	+ 6	+ 1	+ 15.1	+ 4.4
1176	0 .581	+ 21	+ 30	− 63	+ 55	+ 89	+ 27	− 15	+ 6	+ 10	+ 44	+ 9	+ 7	+ 13.4	+ 5.4
1177	0 .650	+ 33	− 29	− 72	+ 46	+ 102	− 20	− 9	− 22	+ 6	+ 41	+ 15	− 9	+ 12.5	+ 6.0
1178	0 .551	+ 25	+ 18	− 136	+ 22	+ 81	− 27	− 12	+ 0	− 15	+ 30	+ 3	− 10	+ 13.5	+ 6.7
1179	0 .661	+ 52	− 1	− 51	+ 30	+ 69	+ 13	+ 1	− 10	+ 17	+ 33	− 3	+ 3	+ 15.0	+ 7.4

No.	B. D. or Br.—St.	Mag.	1900.0 α	1900.0 δ	α μ₁	α μ₂	α μ₃	δ μ₁	δ μ₂	δ μ₃	μ''ₐ	μ''δ
1113	1877	13.1	2h 10m 48s	56° 11'.5	− 0".001‡	+ 0".005‡	+ 0".011	+ 0".015	+ 0".001	+ 0".012‡	+ 0".006	+ 0".010
1114	234	12.0	11 7	11.0	− 0	− 5	− 10	− 21	− 10	− 0	− 6	− 8
1115	55°.564 †	8.1	10 48	10.7	− 14	− 7	+ 5	− 41	− 19	+ 21	− 3	− 4
1117	185	12.1	10 47	10.2	+ 9	− 18	− 15	− 31	+ 1	− 14	− 10	− 14
1118	253	13.2	11 11	9.4	− 8	+ 11	− 21	− 19	+ 1	+ 6	− 10	− 1
1119	239	13.2	11 8	9.2	− 6	− 15	− 13	− 5	+ 7	0	− 12	0
1120	240	13.3	11 9	9.1	− 9	− 32	− 19	− 28	− 25	− 6	− 20	− 16
1121	195	13.3	10 54	9.0	+ 26‡	− 11	− 24‡	− 41	+ 9	+ 25	− 8	+ 4
1122	196	13.8	10 54	8.4	− 5	− 7	− 18	− 10	+ 5‡	+ 17	− 12	+ 7
1123	194	11.8	10 52	8.1	− 18	+ 2	− 18	− 32	− 1	+ 1	− 13	− 8
1124	1305	12.8	10 51	5.6	+ 8	− 9	− 17	−− 9	− 4	+ 1	− 9	− 3
1125	55°.568 †	8.7	11 6	1.0	− 47	− 33	− 51	− 45	− 14	+ 6	− 45	− 12
1126	192	13.8	10 51	0.8	− 0	− 7	− 35‡	+ 7	+ 12	− 32	− 19	− 11
1127	177	12.8	10 45	55° 57'.6	+ 3	− 29	− 47	+ 4	− 9	− 8	− 30	− 5
1129		12.8	11 6	48.2	− 87‡	− 103	− 108		− 48	− 64‡	− 101	− 59
1130		11.1	11 4	47.9	+ 1	− 11	− 39‡	− 15‡	− 1	− 13‡	− 22	− 10
1131		13.2	11 5	47.8	− 2‡	− 15		+ 27‡	− 19		− 8	+ 4
1132		11.5	11 8	47.3	+ 11	+ 11	− 15‡	− 28‡	− 9	− 23‡	− 7	− 21
1133		13.8	10 48	46.6	+ 27‡	− 28‡	− 35‡	+ 37‡	+ 17	− 10‡	− 18	+ 8
1134	55°.567	8.8	11 3	46.1	− 39	− 14	− 38	− 8‡	+ 22	− 27‡	− 32	− 10
1135		11.9	11 8	44.2	+ 45	− 12	− 47‡	+ 9‡	+ 20	− 9‡	− 15	+ 3
1136		12.3	10 54	41.1	+ 10	+ 22	− 63‡	+ 34‡	+ 7‡	− 5‡	− 23	+ 8
	α = 2h 9m 53s to α = 2h 10m 39s.											
1137	57°.532	10.6	2h 10m 9s	57° 40'.4	+ 66‡	− 7	+ 17‡	+ 37‡	+ 38‡	− 17‡	+ 23	+ 10
1138		11.6	10 8	39.8	+ 46‡	− 21	− 11‡	+ 21‡	− 7	− 26‡	+ 1	− 9
1140	78	11.9	9 53	21.9	+ 18	− 12	− 4	− 7	+ 25	0	0	+ 4
1141	91	12.1	10 1	21.2	+ 51	+ 9	+ 26	− 7	+ 2	+ 17	+ 28	+ 7
1142	105	12.4	10 6	19.4	+ 27	+ 2	− 0	− 15	+ 11	+ 13	+ 7	+ 5
1143	134	12.3	10 22	17.0	− 4	− 23	+ 23‡	− 24	− 11	+ 16	+ 5	− 1
1144	95	12.9	10 4	15.9	+ 35	− 4	+ 18	− 12	− 9‡	+ 9	+ 17	− 1
1145	1855	13.9	10 19	13.4	+ 34‡	− 5	+ 5	− 12‡	+ 38	+ 15	+ 10	+ 14
1146	126	12.1	10 19	11.4	− 18	+ 2	+ 3	− 13	− 7	+ 16	− 2	+ 3
1148	89	12.0	10 0	4.1	− 4	− 29	+ 7	− 0	− 16	+ 32	− 5	+ 12
1150	97	11.4	10 4	1.0	− 5	− 2	+ 7	− 17	− 12	+ 4	+ 2	− 5
1151	127	12.8	10 19	0.6	+ 6	− 20‡	+ 2	− 14	− 4	+ 25	− 2	+ 8
1152	82	11.2	9 56	0.5	− 5	− 1	+ 20	+ 1	− 14	+ 15	+ 8	+ 4
1153	121	11.2	10 17	56° 59'.0	+ 1	− 13	+ 8	+ 2	− 0	+ 26	+ 1	+ 13
1154	56°.480 †	8.0	10 26	54.1	− 1	+ 11	+ 22	− 2	− 49	− 28	+ 13	− 27
1155	56°.474 †	10.5	10 0	53.0	− 39	− 34	− 18	− 18	− 16	− 66	− 27	− 41
1156	110	13.7	10 12	52.1	+ 12	− 5	− 9	+ 29	+ 2	− 36	− 3	− 10
1157	131	12.2	10 21	51.8	0	− 29	− 20	− 3	− 2	− 47	− 17	− 25
1158	149	13.1	10 31	51.4	− 7	− 12	− 13	+ 24	+ 2	− 36	− 11	− 11
1159	116	11.7	10 15	51.4	− 16	− 24	− 11	− 2	− 12	− 35	− 15	− 21
1160	147	12.5	10 29	49.9	− 16	+ 4	+ 5	+ 13	− 7	− 20	− 0	− 8
1162	133	12.2	10 21	45.5	− 28	− 7	+ 7	+ 6	+ 6	− 8	− 5	− 1
1163	108	12.7	10 10	45.3	− 5	− 18	− 5	− 11	− 1	− 7	− 8	− 6
1164	56°.473 †	9.0	9 58	39.9	− 19	− 17	− 11	− 0	− 15	+ 10	− 14	+ 1
1165	129	12.8	10 20	39.7	− 11	− 25	+ 7	+ 10	+ 10	− 1	− 5	+ 5
1166	150	12.4	10 31	39.0	+ 172‡	+ 150	+ 155	+ 6	− 23	− 14	+ 158	− 11
1167	139	11.9	10 25	38.8	− 37	− 11	− 11	+ 9	+ 4	− 20	− 17	− 7
1168	128	13.7	10 20	38.5	− 16	− 16	+ 12	+ 18	− 15	+ 5	− 2	+ 3
1169	130	11.7	10 20	38.3	− 13	− 29	− 11	+ 13	+ 9	+ 1	− 16	+ 6
1170	56°.476 †	10.4	10 0	38.1	− 39	− 21	+ 9	+ 4	+ 3	+ 15	− 10	+ 9
1171	140	13.7	10 26	37.7	+ 3	− 3	+ 9	+ 35	+ 19	− 2	+ 4	+ 12
1173	143	13.4	10 26	36.5	− 2	− 1	+ 6	+ 46	− 22	+ 3	+ 2	+ 8
1174	1303	13.4	10 27	36.4	− 30	− 5	− 7	− 2	− 1	+ 4	− 12	+ 1
1175	115	13.2	10 14	35.2	+ 24	− 1	− 11	+ 75	+ 8	+ 2	− 0	+ 22
1176	144	12.7	10 26	34.2	− 11	+ 6	+ 9	+ 34	+ 11	+ 8	+ 3	+ 15
1177	155	12.1	10 33	33.7	− 5	− 22	+ 6	+ 31	+ 17	− 8	− 4	+ 8
1178	141	12.9	10 26	33.0	− 8	− 0	− 16	+ 20	+ 5	− 9	− 10	+ 2
1179	116a	12.0	10 15	32.2	+ 5	− 10	+ 16	+ 23	− 1	+ 4	+ 7	+ 8

Reduction to absolute P.M.: Δ μ''ₐ = − 0".006; Δ μ''δ = + 0".007.

No.	diameter	α			δ			α			δ			z	γ
		M_1	M_2	M_3	M_1	M_2	M_3	m_1	m_2	m_3	m_1	m_2	m_3		
1180	0r.750	+ 0r.002	− 0r.008	− 0r.111	+ 0r.007	+ 0r.068	− 0r.033	− 0″.023	− 0″.013	− 0″.007	+ 0″.023	− 0″.003	− 0″.013	+ 12p.8	+ 8p.2
1181	0.608	+ 8	+ 24	− 91	+ 36	+ 70	− 29	− 20	+ 2	− 0	+ 38	− 2	− 12	+ 12.6	8.3
1182	0.407	− 42	+ 10	− 60	+ 60	+ 126	− 9	− 43	− 15	+ 14	+ 49	+ 24	− 4	+ 14.6	8.6
1183	0.708	+ 7	+ 24	− 112	+ 6	+ 122	+ 1	− 20	+ 1	− 4	+ 23	+ 22	0	+ 15.2	+ 9.3
1184	1.049	− 4	+ 18	− 132	+ 41	+ 41	− 33	− 24	− 2	− 9	+ 41	− 18	− 11	+ 16.4	+ 9.4
1185	0.539	+ 47	− 3	− 120	+ 48	+ 93	− 42	+ 1	− 12	− 10	+ 46	+ 8	− 14	+ 12.9	+ 9.7
1186	0.514	− 4	+ 25	− 97	+ 38	+ 64	− 53	− 24	+ 1	− 1	+ 41	− 7	− 18	+ 13.7	+ 9.9
1187	0.543	+ 13	+ 12	− 93	+ 47	+ 101	− 17	− 15	− 7	+ 6	+ 45	+ 10	− 5	+ 16.7	+ 11.3
1188	0.454	− 17	+ 31	− 104	+ 7	+ 124	− 1	− 28	+ 2	+ 2	+ 27	+ 20	+ 1	+ 17.0	+ 11.7
1190	0.588	+ 24	− 1	− 97	+ 25	+ 104	− 57	− 8	− 13	+ 1	+ 38	+ 11	− 18	+ 15.0	+ 12.9
1191	0.938	− 14	+ 9	− 96	+ 34	+ 107	− 33	− 26	− 9	+ 5	+ 41	+ 12	− 10	+ 16.5	+ 13.0
1192	0.501	+ 4	+ 52	− 108	+ 59	+ 75	+ 14	− 17	+ 12	0	+ 54	− 4	+ 7	+ 16.1	+ 13.3
1193	1.192	− 70	+ 26	− 87	+ 3	+ 77	− 18	− 53	0	+ 5	+ 27	− 3	− 4	+ 14.9	+ 13.7
1195	0.408	+ 64	+ 12	− 43	+ 96	+ 146	+ 6	+ 14	− 8	+ 20	+ 75	+ 30	− 5	+ 14.8	+ 15.6
1196	0.522	− 33	+ 21	− 120	+ 33	+ 74	− 79	− 33	− 5	− 3	+ 44	− 6	− 24	+ 16.7	+ 15.8
1197	0.521	− 9	+ 48	− 77	− 14	+ 83	− 69	− 20	+ 9	+ 6	+ 24	− 1	− 22	+ 13.9	+ 17.6
1198	0.535	− 7	+ 62	− 100	+ 60	+ 98	+ 3	− 18	+ 14	+ 3	+ 62	+ 4	+ 5	+ 16.1	+ 18.7
1199	0.640	+ 12	+ 33	− 118	− 54	+ 93	− 43	− 9	0	− 3	+ 6	+ 1	− 12	+ 16.4	+ 19.3
1200	0.603	− 19	+ 34	− 102	+ 15	+ 98	− 22	− 23	+ 1	− 1	+ 26	+ 4	− 5	+ 14.6	+ 20.0
1201	0.859	− 18	+ 35	− 112	+ 49	+ 119	− 1	− 21	0	− 0	+ 11	+ 13	+ 3	+ 16.6	+ 21.1
1202	1.320	− 85	− 28	− 132	− 72	+ 103	− 7	− 54	− 31	− 8	0	+ 5	+ 2	+ 15.9	+ 21.4
1203	0.734	− 14	+ 2	− 147	− 23	+ 122	+ 57	− 18	− 17	− 14	+ 25	+ 14	+ 23	+ 16.4	+ 22.5
1205	0.508	− 58	+ 38	− 67	− 84	+ 104	− 24	− 40	+ 1	+ 12	− 3	+ 6	− 6	+ 14.6	+ 23.2
1206	0.551	+ 17	+ 38	− 69	− 4	+ 98	+ 26	− 2	0	+ 15	+ 40	+ 2	+ 12	+ 16.7	+ 23.2
1207	0.619	− 17	+ 62	− 273	− 56	+ 85	− 23	− 18	+ 12	− 61	+ 14	− 5	− 5	+ 14.4	+ 24.9
1208	0.518	+ 13	+ 46	− 128	− 86	+ 110	+ 17	− 2	+ 3	− 6	0	+ 6	+ 9	+ 16.5	+ 25.0
1209	0.478	+ 3	+ 27	− 87	− 84	+ 115	− 36	− 6	− 6	+ 5	+ 3	+ 8	− 10	+ 14.8	+ 27.2
1210	0.918	− 48	+ 1	− 114	− 99	+ 97	− 30	− 32	− 19	− 6	− 3	0	− 8	+ 13.8	+ 27.2
1211	0.584	+ 19	+ 3	− 105	− 60	+ 117	− 32	+ 2	− 18	− 4	+ 19	+ 9	− 9	+ 13.2	+ 28.7
1214	0.466	+ 75	+ 6	− 135	− 59	+ 129	− 7	+ 39	− 22	− 12	+ 33	+ 10	− 0	+ 15.1	+ 37.1
1215	0.831	− 39	+ 58	− 159	− 147	+ 102	− 27	− 16	+ 3	− 22	− 6	− 4	− 14	+ 13.8	+ 38.7
1216	0.649	− 27	+ 37	− 114	− 156	+ 133	− 49	− 10	− 8	− 4	− 11	+ 11	− 22	+ 15.2	+ 38.7
1217	0.809	− 49	+ 51	− 91	− 201	+ 108	− 41	− 17	− 2	+ 1	− 25	− 3	− 22	+ 12.7	+ 42.5
1218	0.652	− 6	+ 97	− 168	− 181	+ 118	− 129	+ 13	+ 16	− 28	+ 6	− 2	− 65	+ 11.9⁶	+ 52.0⁶

α = 2h 9m 22s to x = 2h 10m 1s.

No.	diameter	α			δ			α			δ			z	γ
		M_1	M_2	M_3	M_1	M_2	M_3	m_1	m_2	m_3	m_1	m_2	m_3		
1219	0.650	+ 238	− 34	− 100	+ 85	+ 52	+ 429	+ 61	− 2	+ 5	+ 48	+ 23	+ 42	+ 19.2	− 47.1
1220	0.838	+ 197	− 71	− 121	+ 9	+ 113	+ 321	+ 41	− 21	+ 3	+ 10	+ 50	+ 7	+ 21.8	− 46.3
1221	0.521	+ 273	− 69	− 102	+ 58	+ 53	+ 327	+ 80	− 21	+ 4	+ 34	+ 21	+ 16	+ 19.1	− 44.3
1222	0.651	+ 221	− 39	− 90	+ 10	+ 42	+ 324	+ 55	− 6	+ 6	+ 9	+ 16	+ 18	+ 18.3	− 43.1
1223	0.631	+ 172	− 62	− 171	− 13	− 18	+ 197	+ 33	− 20	− 17	− 4	− 18	+ 13	+ 20.6	− 38.5
1224	0.809	+ 115	− 25	− 89	+ 46	+ 45	+ 200	+ 7	− 3	+ 11	+ 24	+ 10	0	+ 19.6	− 33.9
1225	0.755	+ 116	− 19	− 91	+ 20	+ 66	+ 216	+ 8	− 1	+ 7	+ 11	+ 20	+ 10	+ 18.3	− 32.6
1226	0.580	+ 181	+ 19	− 119	+ 50	+ 52	+ 190	+ 41	+ 15	+ 5	+ 25	+ 8	+ 10	+ 22.1	− 29.2
1229	1.044	+ 94	− 11	− 141	+ 22	+ 43	+ 174	+ 1	− 1	+ 5	+ 11	+ 2	+ 14	+ 20.9	− 24.8
1230	0.682	+ 87	− 23	− 98	− 36	+ 55	+ 134	− 1	− 8	+ 10	− 17	+ 7	+ 2	+ 21.3	− 24.2
1231	0.616	+ 87	− 20	− 120	− 6	+ 68	+ 172	− 1	− 7	+ 1	− 1	+ 14	+ 17	+ 19.9	− 23.2
1232	0.858	+ 83	− 35	− 89	− 17	+ 20	+ 121	− 2	− 15	+ 12	− 7	− 11	+ 3	+ 19.7	− 20.8
1233	0.604			− 129	− 8	+ 92	+ 138			− 6	− 2	+ 24	+ 10	+ 18.2	− 20.6
1235	0.521	+ 104	+ 23	− 164	+ 42	+ 15	− 41	+ 12	+ 10	− 11	+ 23	− 17	+ 43	+ 21.5	− 15.5
1236	0.763	+ 109	+ 90	− 26	+ 2	+ 20	− 48	+ 16	+ 41	+ 34	+ 2	− 16	+ 42	+ 19.9	− 12.8
1237	0.603	+ 99	− 18	− 93	− 6	+ 54	+ 29	+ 13	− 12	+ 10	+ 2	− 1	+ 10	+ 18.8	− 10.2
1238	0.598	+ 123	− 36	− 123	+ 7	+ 84	− 23	+ 25	− 22	+ 5	+ 8	+ 11	− 26	+ 22.1	− 9.2
1239	0.616	+ 28	+ 5	− 105	− 1	+ 96	+ 3	− 17	− 5	+ 12	+ 8	+ 14	− 9	+ 21.8	− 3.0
1240	0.690	+ 33	+ 6	− 186	+ 1	+ 67	+ 10	− 15	− 4	− 20	9	0	− 7	+ 20.5	− 2.8
1241	0.614	+ 53	− 5	− 86	+ 52	+ 73	− 3	− 2	− 11	+ 13	+ 38	+ 1	− 7	+ 19.2	+ 1.2
1242	0.463	+ 4	+ 55	− 152	+ 14	+ 97	− 10	− 25	+ 17	− 5	+ 19	+ 11	− 9	+ 22.2	+ 2.2
1243	2.120	− 46	− 5	− 13	+ 56	+ 107	− 80	− 48	− 12	+ 36	+ 42	+ 17	− 31	+ 18.2	+ 4.2
1244	0.579	+ 39	+ 51	− 179	+ 22	+ 68	− 46	− 5	+ 13	− 14	+ 26	− 4	− 19	+ 21.7	+ 4.8
1245	0.607	+ 13	+ 31	− 145	+ 36	+ 68	+ 7	− 18	− 4	− 5	+ 33	− 4	− 1	+ 20.5	+ 4.8⁵
1246	0.712	+ 34	+ 31	− 139	+ 7	+ 84	− 49	− 8	+ 4	− 2	+ 19	+ 4	− 20	+ 20.8	+ 5.2
1247	1.812	− 36	+ 16	− 87	+ 13	+ 82	+ 8	− 42	− 3	+ 13	+ 23	+ 2	+ 1	+ 18.9	+ 5.8

No.	B. D. or Br.—St.	Mag.	1900.0 α	1900.0 δ	α μ_1	α μ_2	α μ_3	δ μ_1	δ μ_2	δ μ_3	μ''_α	μ''_δ
1180	152	11.4	2h 10m 31s	56° 31'.4	− 0".019	− 0".013	− 0".007	+ 0".013	− 0".001	− 0".012	− 0".011	− 0".003
1181	153	12.5	10 32	31.3	− 16	+ 2	0	+ 28	0	− 11	− 4	+ 1
1182	123	14.0	10 18	31.1	− 39	− 15	+ 13	+ 39	+ 26	− 3	− 7	+ 15
1183	113	11.7	10 14	30.3	− 16	+ 1	− 5	+ 13	+ 24	+ 1	− 6	+ 10
1184	56°.477 †	9.8	10 5	30.2	− 20	− 2	− 10	+ 31	− 16	− 10	− 10	− 1
1185	148	13.1	10 30	30.0	+ 5	− 12	− 10	+ 36	+ 10	− 13	− 7	+ 5
1186	137	13.3	10 25	29.8	− 20	+ 1	− 2	+ 31	− 5	− 17	− 6	− 2
1187	93	13.0	10 3	28.3	− 11	− 7	+ 5	+ 35	+ 12	− 4	− 2	+ 10
1188	90	13.8	10 1	28.1	− 24	+ 2	+ 1	+ 17	+ 22	+ 2	− 5	+ 11
1190	118	12.6	10 16	26.9	− 4	− 13	0	+ 28	+ 13	− 17	− 4	+ 2
1191	98	10.3	10 5	26.7	− 22	− 9	+ 4	+ 31	+ 14	− 9	− 6	+ 7
1192		13.4	10 8	26.4	− 13	+ 12	− 1‡	+ 44	− 2	+ 8‡	− 1	+ 14
1193	56°.479 †	9.1	10 16	26.0	− 49	0	+ 4	+ 17	− 1	− 3	− 10	+ 2
1195	120	14.0	10 17	24.2	+ 17‡	− 8	+ 19	+ 65	+ 32	+ 6	+ 12	+ 27
1196	94	13.2	10 3	23.9	− 30	− 4	− 4	+ 33	− 5	− 23	− 10	− 4
1197	135	13.2	10 23	22.2	− 17	+ 10	+ 5	+ 13	0	− 21	+ 1	− 7
1198	107	13.1	10 8	21.1	− 15	+ 15	+ 2	+ 51	+ 5	+ 6	+ 1	+ 17
1199	103	12.2	10 6	20.3	− 6	+ 1	− 4	− 5	+ 2	− 11	− 3	− 6
1200	124	12.5	10 18	19.7	− 20	+ 2	− 2	+ 15	+ 5	− 3	− 5	+ 3
1201	99	10.7	10 5	18.7	− 18	+ 1	− 1	0	+ 14	+ 4	− 5	+ 5
1202	56°.478 †	8.6	10 10	18.3	− 51	− 30	− 9	− 11	+ 6	+ 3	− 25	0
1203	104	11.5	10 6	17.3	− 15	− 16	− 15	+ 14	+ 15‡	+ 24	− 15	+ 19
1205	125	13.3	10 19	16.5	− 37	+ 2	+ 11	− 14	+ 7	− 4	− 3	− 4
1206	96	12.9	10 4	16.5	+ 1	+ 1	+ 14	+ 29	+ 3	+ 13	+ 7	+ 14
1207	132	12.4	10 21	14.9	− 16	+ 13	− 62	+ 3	− 4	− 3	− 32	− 2
1208	101	13.2	10 5	14.8	0	+ 4	− 7	− 11	+ 7	+ 11	− 2	+ 4
1209	122	13.6	10 17	12.5	− 4	− 5	+ 4	− 8	+ 9	− 8	0	− 4
1210	136	10.4	10 25	12.5	− 30	− 18	− 7	− 14	+ 1	− 6	− 15	− 6
1211	146	12.7	10 29	11.2	+ 4	− 17	− 5	+ 8	+ 10	− 6	− 6	+ 1
1214	1852	13.7	10 16	2.7	+ 39	− 20‡	− 13	+ 21	+ 10‡	+ 3	− 2	+ 9
1215	138	10.9	10 25	1.3	− 16	+ 5	− 23	− 18	− 4	− 10	− 14	− 10
1216	117	12.1	10 15	1.3	− 10	− 6	− 5	− 23	+ 11	− 18	− 6	− 12
1217	156	11.0	10 33	55° 57'.4	− 18	0	0	+ 38	− 3	− 17‡	− 4	− 19
1218		12.1	10 39	48.0	+ 10‡	+ 18	− 29‡	− 8‡	− 2‡	− 58‡	− 7	− 31
	$\alpha = $ 2h 9m 22s to $\alpha = $ 2h 10m 1s.											
1219	1817	12.1	2h 9m 42s	57° 26'.3	+ 61‡	− 3‡	+ 3	+ 38‡	+ 27‡	+ 49‡	+ 16	+ 41
1220	33a	10.8	9 24	25.7	+ 41	− 22	0	0	+ 53	+ 14‡	+ 5	+ 20
1221	1818	13.2	9 43	23.6	+ 80	− 22	+ 2	+ 24	+ 25‡	+ 22	+ 15	+ 23
1222	68	12.1	9 49	22.3	+ 56	− 7	+ 4	− 1	+ 20	+ 24	+ 14	+ 17
1223	1798	12.3	9 32	17.8	+ 35	− 21	− 19	− 14	− 15	− 8	− 6	− 11
1224	56	11.0	9 40	13.2	+ 9	− 4‡	+ 9	+ 15	+ 13	+ 4	+ 6	+ 9
1225	70	11.3	9 49	11.9	+ 10	− 2	+ 5	+ 2	+ 23	+ 14	+ 4	+ 13
1226	32	12.7	9 22	8.6	+ 44	+ 14	+ 3	+ 16	+ 11	+ 13	+ 16	+ 13
1229	56°.467 †	9.8	9 31	4.1	+ 5	− 2	− 7	+ 2	− 5	+ 16	− 3	+ 10
1230	39	11.9	9 27	3.6	+ 3	− 9	+ 8	− 26	+ 10	+ 4	+ 2	+ 2
1231	52	12.4	9 38	2.6	+ 3	− 8	− 1	− 10	+ 17‡	+ 19	− 2	+ 11
1232	57	10.7	9 40	0.2	+ 2	− 16	+ 10	− 16	− 8	+ 5	+ 1	− 3
1233	73	12.5	9 51	0.0		− 7		− 11	+ 27‡	+ 12	− 7	+ 10
1235	37	13.2	9 27	56° 54'.9	+ 17	+ 10	− 13	+ 14	− 15	− 42	0	− 21
1236	54	11.3	9 39	52.2	+ 21	+ 41	+ 33	− 7	− 14	− 41	+ 32	− 26
1237	64	12.5	9 47	49.7	+ 18	− 12	+ 9	− 7	+ 1	+ 11	+ 6	+ 4
1238	1787	12.5	9 23	48.7	+ 30	− 22	+ 3	− 1	+ 13	− 26	+ 3	− 10
1239	36	12.4	9 26	42.5	− 12‡	− 5	+ 10	− 1	+ 16	− 9	+ 1	− 1
1240	49	11.8	9 35	42.3	− 10	− 4	− 21	0	+ 2	− 7	− 14	− 3
1241	61	12.4	9 45	38.4	+ 3	− 11	+ 12	+ 28	+ 3	− 7	+ 4	+ 4
1242	34	13.8	9 23	37.4	− 20	+ 17	− 7	+ 9	+ 13	− 10	− 4	0
1243	56°.471 †	6.4	9 52	35.4	− 44	− 12	+ 35	+ 32	+ 19	− 31	+ 3	− 3
1244	38	12.7	9 27	34.8	0‡	+ 13	− 16	+ 16‡	− 2	− 20	− 5	− 6
1245	51	12.5	9 36	34.8	− 13	+ 4	− 6	+ 23	− 2	− 1	− 5	+ 5
1246	56°.468 †	11.7	9 33	34.3	− 3	+ 4	− 3	+ 9	+ 6	− 20	− 1	− 6
1247	56°.470 †	7.1	9 47	33.8	− 38	− 3	+ 12	+ 13	+ 4	+ 1	− 4	+ 5

Reduction to absolute P.M.: $\Delta \mu''_\alpha = − 0".006$; $\Delta \mu''_\delta = + 0".007$.

No.	diameter	α M₁	α M₂	α M₃	δ M₁	δ M₂	δ M₃	α m₁	α m₂	α m₃	δ m₁	δ m₂	δ m₃	x	γ
1248	0ʳ.653	+ 0ʳ.032	+ 0ʳ.027	− 0ʳ.103	+ 0ʳ.041	+ 0ʳ.097	+ 0ʳ.026	− 0″.008	+ 0.″001	+ 0″.007	+ 0″ 038	+ 0″.003	+ 0″.008	+ 18ᵖ.8	+ 7ᵖ.2
1251	0.665	− 4	+ 48	− 141	+ 37	+ 59	+ 27	− 23	+ 10	+ 6	+ 39	− 11	+ 10	+ 18.9	+ 9.7
1252	0.483	+ 71	+ 41	− 112	− 7	+ 75	− 24	+ 16	+ 5	+ 4	+ 21	− 5	− 6	+ 18.9	+ 13.2
1253	1.029	− 45	− 14	− 129	− 18	+ 61	+ 19	− 39	− 22	− 4	+ 18	− 12	+ 9	+ 18.0	+ 15.3
1254	0.656	+ 48	+ 18	− 178	+ 10	+ 107	− 20	+ 8	− 8	− 17	+ 33	+ 9	− 4	+ 19.8	+ 16.5
1256	0.610	− 31	+ 15	− 162	− 39	+ 91	+ 22	− 29	− 10	− 15	+ 13	0	+ 11	+ 17.7	+ 19.4
1257	0.506	+ 8	+ 89	− 136	− 8	+ 103	− 2	− 8	+ 23	+ 1	+ 28	+ 4	+ 3	+ 21.6	+ 19.9
1258	0.719	− 12	+ 45	− 172	− 51	+ 112	− 13	− 19	+ 4	− 19	+ 9	+ 10	− 1	+ 18.0	+ 20.4
1259	0.481	+ 96	+ 126	− 17	− 112	+ 67	− 112	+ 35	+ 43	+ 36	− 20	− 13	− 35	+ 18.4	+ 21.4
1260	0.501	− 14	+ 92	− 145	+ 26	+ 116	− 90	− 16	+ 24	+ 6	+ 49	+ 10	− 29	+ 20.1	+ 23.0
1261	0.685	− 22	+ 15	− 137	− 51	+ 102	+ 22	− 21	− 13	− 4	+ 12	+ 3	+ 10	+ 18.8	+ 23.2
1262	1.440	− 63	+ 26	− 105	− 89	+ 55	+ 20	− 40	− 8	+ 8	− 7	− 20	+ 10	+ 19.9	+ 23.3
1263	0.824	+ 12	+ 61	− 151	− 65	+ 97	− 30	− 1	+ 7	− 3	+ 7	− 1	− 7	+ 21.7	+ 24.7
1264	1.721	− 103	− 3	− 80	− 88	+ 51	− 49	− 60	− 21	+ 12	− 3	− 22	− 14	+ 17.4	+ 24.6
1265	0.513	+ 17	+ 79	− 166	− 67	+ 110	− 24	0	+ 17	− 13	+ 7	+ 5	− 5	+ 20.2	+ 24.8
1266	0.634	− 10	+ 27	− 131	− 83	+ 77	+ 23	− 11	− 10	− 1	+ 2	− 11	+ 11	+ 19.9	+ 27.2
1267	0.486	+ 75	+ 8	− 165	− 137	+ 101	− 31	+ 34	− 20	− 12	− 20	− 1	− 9	+ 20.4	+ 30.0
1268	0.651	+ 17	+ 11	− 82	− 128	+ 76	− 54	+ 5	− 18	+ 11	− 11	− 14	− 18	+ 17.1	+ 31.8
1269	0.592	+ 25	+ 48	− 166	− 149	+ 119	− 41	+ 10	− 1	− 16	+ 21	+ 7	− 14	+ 18.3	+ 31.9⁵
1270	0.667	+ 6	+ 37	− 100	− 186	+ 85	− 20	+ 1	− 7	+ 9	+ 40	− 10	− 6	+ 19.4	+ 32.1
1271	0.470	+ 162	− 42	− 187	− 84	+ 121	− 16	+ 80	− 48	− 16	+ 11	+ 6	− 5	+ 21.8	+ 33.0
1272	0.520	− 4	+ 58	− 175	− 105	+ 101	− 37	0	+ 2	− 17	+ 5	− 4	− 15	+ 18.8	+ 35.3
1273	0.482	+ 144	+ 68	− 181	− 52	+ 167	− 10	+ 75	+ 4	− 17	+ 35	+ 27	− 6	+ 20.4	+ 37.2
1275	1.068	+ 2	+ 62	− 163	− 139	+ 99	− 40	+ 7	0	− 8	+ 6	− 7	− 18	+ 21.4	+ 38.5
1277	0.510	+ 40	+ 69	− 149	− 96	+ 107	− 16	+ 26	+ 4	− 8	+ 19	− 3	− 10	+ 18.8	+ 40.0
1278	0.732	+ 70	+ 89	− 144	− 154	+ 125	− 21	+ 42	+ 13	− 2	− 10	+ 5	− 13	+ 21.2	+ 40.4
1279	0.706	+ 30	+ 25	− 139	− 91	+ 131	− 2	+ 23	− 19	− 1	+ 22	+ 8	− 7	+ 20.8	+ 40.7
1280	0.638	+ 105	+ 64	− 156	− 117	+ 130	+ 19	+ 61	+ 1	− 13	+ 15	+ 7	− 1	+ 17.9⁵	+ 42.8
1281	0.494	+ 51	+ 142	− 134	− 167	+ 106	− 40	+ 41	+ 34	− 1	+ 3	− 8	− 30	+ 20.1	+ 48.8
1282	0.706	+ 32	+ 44	− 169	− 170	+ 153	− 19	+ 33	− 14	− 15	+ 4	+ 14	− 24	+ 18.7	+ 50.5
1284	0.838	− 30	+ 45	− 142	− 195	+ 137	− 44	+ 4	− 14	− 6	− 4	+ 6	− 34	+ 18.5	+ 51.7
1285	0.875	− 12	+ 59	− 153	− 214	+ 152	− 39	+ 14	− 7	− 9	+ 13	+ 13	− 34	+ 19.1	+ 51.9
1286	0.570	− 13	+ 45	− 164	− 92	+ 164	− 17	+ 13	− 14	− 15	+ 49	+ 18	− 28	+ 18.1	+ 53.0
1288	0.572	− 7	+ 78	− 173	− 140	+ 158	+ 58	+ 21	− 1	− 15	+ 32	+ 14	− 6	+ 20.2	+ 56.0
	α = 2ʰ 8m 39s to α = 2ʰ 9m 21s.														
1289	0.805	+ 128	+ 45	− 108	+ 51	− 31	+ 529	+ 3	+ 41	+ 15	+ 39	− 14	+ 40	+ 27.0	− 57.6
1290	0.729	+ 151	+ 44	− 131	− 12	0	+ 541	+ 15	+ 39	+ 9	+ 7	− 1	+ 50	+ 27.5	− 55.9
1291	0.750	+ 175	− 35	− 100	− 1	+ 44	+ 222	+ 34	− 7	+ 17	+ 1	+ 10	− 5	+ 25.4	− 39.3
1292	1.246	+ 158	− 20	− 108	+ 11	+ 46	+ 271	+ 26	− 1	+ 14	+ 7	+ 10	+ 16	+ 24.7	− 37.4
1294	0.723	+ 155	+ 36	− 95	− 24	− 27	+ 132	+ 29	+ 23	+ 16	− 11	− 30	− 13	+ 23.6	− 30.1
1295	1.177	+ 126	− 44	− 103	+ 4	+ 64	+ 155	+ 15	− 16	+ 13	+ 2	+ 15	− 5	+ 23.5	− 29.8
1296	0.531	+ 129	+ 4	− 172	− 8	+ 52	+ 127	+ 17	− 6	− 3	+ 4	+ 6	− 12	+ 27.5	− 29.2
1297	0.571	+ 114	+ 104	− 129	− 41	+ 37	+ 158	+ 10	+ 55	+ 11	− 20	+ 1	+ 1	+ 26.7	− 27.8
1298	0.840	+ 79	− 40	− 139	− 5	+ 47	+ 129	− 7	− 16	+ 1	+ 2	+ 4	+ 6	+ 23.5	− 26.9
1300	0.655	+ 107	− 14	− 178	+ 37	+ 29	− 9	+ 11	− 7	− 4	+ 18	− 11	− 40	+ 27.5	− 20.4
1301	1.066	+ 44	+ 27	− 228	− 1	+ 53	− 53	− 18	+ 11	− 23	0	0	− 51	+ 26.9⁶	− 17.9
1302	0.611	+ 89	+ 17	− 182	− 19	+ 24	+ 20	+ 4	− 9	− 15	− 8	− 12	− 26	+ 22.8	− 17.8
1303	0.841	+ 39	+ 31	− 230	+ 10	+ 44	− 75	− 20	+ 13	− 24	+ 6	− 5	− 57	+ 26.5	− 17.2
1304	0.550	+ 123	− 52	− 123	+ 45	+ 62	− 60	+ 21	− 26	+ 7	− 20	+ 5	− 52	+ 23.4	− 17.0
1305	0.740	+ 141	0	− 143	+ 15	+ 15	− 47	+ 31	− 2	− 1	+ 10	− 18	− 44	+ 23.3	− 14.8
1306	0.650	+ 66	− 4	− 173	+ 6	+ 43	− 19	− 5	− 4	− 11	+ 5	− 6	− 32	+ 22.9	− 13.6
1307	0.528	+ 139	0	− 152	− 29	+ 29	− 30	+ 31	− 3	0	+ 17	− 14	− 35	+ 24.7	− 13.2
1308	0.822	+ 116	+ 48	− 82	− 51	− 11	− 71	+ 20	+ 20	+ 21	− 21	− 33	− 47	+ 23.2	− 12.1
1309	0.519	+ 114	+ 8	− 226	+ 26	+ 39	− 9	+ 20	− 8	− 28	+ 16	− 9	− 25	+ 23.9⁵	− 11.8
1310	0.540	+ 116	− 31	− 162	+ 29	+ 90	− 27	+ 24	− 22	+ 1	+ 19	+ 12	− 25	+ 26.7	− 7.9
1312	0.562	+ 136	+ 103	− 31	− 84	+ 20	− 93	+ 36	+ 41	+ 45	− 34	− 24	− 44	+ 26.2	− 4.5
1313	0.558	+ 109	− 45	− 142	+ 29	+ 44	+ 14	+ 23	− 31	+ 9	+ 20	− 13	− 6	+ 27.2	− 3.8
1314	0.690	+ 61	+ 10	− 155	− 21	+ 74	+ 15	0	− 3	0	− 3	+ 2	− 6	+ 25.3	− 3.8
1315	0.580	0	+ 12	− 212	− 20	+ 143	+ 58	− 26	− 6	− 20	+ 2	+ 33	+ 15	+ 24.7	+ 2.2
1317	0.859	+ 58	+ 62	− 93	+ 39	+ 9	+ 75	+ 3	+ 18	+ 22	+ 31	− 33	+ 23	+ 25.0	+ 3.3
1318	0.454	+ 89	+ 25	− 178	− 31	+ 49	− 33	+ 21	− 2	− 9	0	− 15	− 13	+ 23.8	+ 6.5

No.	B. D. or Br.—St.	Mag.	1900.0 α	1900.0 δ	α μ₁	α μ₂	α μ₃	δ μ₁	δ μ₂	δ μ₃	μ''α	μ''δ
1248	67	12.1	2h 9m 48s	56° 32'.5	− 0".004	+ 0".001	+ 0".006	+ 0".028	+ 0".011	+ 0".008	+ 0".002	+ 0".014
1251	66	12.0	9 47	30.0	− 19	+ 10	− 7	+ 29	− 9	+ 10	− 6	+ 10
1252	1823	13.6	9 47	26.5	+ 20‡	+ 6	+ 3	+ 11	− 4	− 6	+ 8	− 1
1253	56°.472 †	9.9	9 54	24.4	− 35	− 21	− 5	+ 8	− 11	+ 9	− 16	+ 4
1254	60	12.1	9 41	23.2	+ 12	− 7	− 18	+ 22	+ 10	− 4	− 8	+ 6
1256	83	12.4	9 56	20.3	− 26	− 9	− 16	+ 2	+ 1	+ 12	− 17	+ 7
1257	41	13.4	9 28	19.8	− 5‡	+ 24	− 1	+ 17	+ 5	+ 3	+ 4	+ 7
1258	80	11.6	9 54	19.4	− 16	− 5	− 20	− 2	+ 11	+ 0	− 13	+ 2
1259	74	13.6	9 51	18.3	+ 38	+ 44	+ 35	− 31	− 12	− 34	+ 38	− 28
1260	1812	13.4	9 40	16.8	− 13	+ 25	− 8	+ 38	+ 11‡	− 29	− 1	− 2
1261	69	11.8	9 49	16.4	− 18	− 12	− 5	+ 1	+ 4	+ 11	− 10	+ 7
1262	56°.469 †	8.2	9 41	16.3	− 37	− 7	+ 6	− 18	− 19	+ 10	− 8	− 4
1263	40	10.9	9 28	15.1	+ 2	+ 9	− 5	− 4	+ 0	− 7	+ 0	− 4
1264	56°.475 †	7.4	9 58	15.2	− 57	− 20	+ 11	− 14	− 21	− 13	− 14	− 15
1265	55	13.3	9 39	15.0	+ 3	+ 18	− 15	− 4	+ 6	− 5	− 2	− 2
1266	59	12.2	9 41	12.6	− 8	− 8	− 3	− 9	− 10	+ 12	− 5	+ 1
1267	53	13.5	9 38	9.8	+ 36	− 18	− 14	− 31	− 1	− 8	− 2	− 12
1268	92	12.1	10 1	8.0	+ 7	− 16	+ 10	− 23	− 14	− 16	+ 3	− 17
1269	79	12.6	9 53	7.9	+ 12	+ 1	− 17	− 33	+ 7‡	− 12	− 5	− 12
1270	62	12.0	9 46	7.7	+ 3	− 5	+ 7	− 52	− 10	− 5	+ 3	− 18
1271	1792	13.7	9 28	6.8	+ 82‡	− 46‡	− 18	− 1‡	+ 6‡	− 4	0	− 1
1272	72	13.2	9 50	4.5	+ 1	+ 4‡	− 19	− 7	− 4‡	− 13	− 8	− 9
1273	1807	13.6	9 38	2.7	+ 76	+ 6	− 19	+ 23	+ 27	− 4	+ 11	+ 10
1275	55°.557 †	9.7	9 31	1.4	+ 8	+ 2	− 10	− 18	− 7	− 16	− 2	− 14
1277	71	13.3	9 50	55° 59'.9	+ 26	+ 6	− 10	+ 7	− 3	− 7	+ 3	− 2
1278	55°.558 †	11.5	9 33	59.4	+ 42	+ 16	− 4	− 23	+ 5	− 11‡	+ 12	− 10
1279	50	11.7	9 35	59.3	+ 23	− 16	− 3	+ 9	+ 8	− 5‡	+ 0	+ 2
1280	1832	12.2	9 56	57.2	+ 61‡	+ 3	− 15	+ 2‡	+ 7	+ 2	+ 8	+ 3
1281	1813	13.5	9 40	51.1	+ 39‡	+ 37	− 3‡	− 10‡	− 9‡	− 26‡	+ 17	− 18
1282		11.7	9 51	49.4	+ 31	− 11	− 17‡	− 10‡	+ 13	− 19‡	− 3	− 9
1284		10.8	9 53	48.2	+ 1	− 11	− 8‡	− 18‡	+ 5	− 29‡	− 6	− 18
1285		10.6	9 48	48.0	+ 11	− 4	− 11‡	− 27‡	+ 12	− 29‡	− 4	− 18
1286		12.8	9 55	46.9	+ 10‡	− 11‡	− 17‡	+ 35‡	+ 17‡	− 23‡	− 9	+ 1
1288		12.8	9 41	43.9	+ 17	+ 3	− 17‡	+ 18‡	+ 13‡	− 1‡	− 3	+ 7

α = 2h 8m 39s to α = 2h 9m 21s.

No.	B. D. or Br.—St.	Mag.	1900.0 α	1900.0 δ	α μ₁	α μ₂	α μ₃	δ μ₁	δ μ₂	δ μ₃	μ''α	μ''δ
1289		11.0	2h 8m 43s	57° 36'.7	+ 1‡	+ 40‡	+ 11‡	+ 29‡	− 11‡	+ 49‡	+ 16	+ 29
1290		11.5	8 39	35.1	+ 14‡	+ 38	+ 5‡	− 3‡	+ 2‡	+ 58‡	+ 15	+ 29
1291	1	11.4	8 57	18.6	+ 36	− 8	+ 14	− 8	+ 13	− 1	+ 14	+ 1
1292	57°.527 †	8.9	9 2	16.7	+ 28	− 2	+ 11	− 2	+ 13	+ 20	+ 12	+ 13
1294	56°.465 †	11.6	9 11	9.4	+ 32	+ 22	+ 14	− 20	− 27	− 10	+ 20	− 17
1295	56°.466 †	9.2	9 11	9.0	+ 18	− 17	+ 11	− 7	+ 18	− 2	+ 6	+ 2
1296		13.1	8 42	8.5	+ 21	+ 5	− 6	− 13	+ 8	− 10	+ 3	− 6
1297		12.8	8 48	7.1	+ 14‡	+ 54‡	+ 8‡	− 29	+ 1‡	+ 3‡	+ 21	− 5
1298	16	10.8	9 11	6.2	− 3	− 17	− 1	− 11	+ 7	− 4	− 5	− 3
1300		12.1	8 43	56° 59'.8	+ 16	− 8	− 7	+ 9	− 9	− 40	− 2	− 20
1301	56°.464	9.7	8 47	57.3	− 13	+ 11	− 26	− 9	+ 2	− 51	− 13	− 27
1302	29	12.4	9 17	57.1	+ 9	− 9	− 17	− 17	− 10	− 26	− 8	− 20
1303		10.8	8 50	56.6	− 15	+ 13	− 26	− 3	− 3	− 57	− 13	− 30
1304	19	13.0	9 13	56.5	+ 26	− 26	+ 5	+ 29	+ 7	− 52	+ 2	− 31
1305	21	11.5	9 14	54.2	+ 36	− 2	− 3	+ 1	− 16	− 44	+ 7	− 26
1306	28	12.1	9 17	53.0	0	− 4	− 13	− 4	− 4	− 32	− 7	− 18
1307	8	13.2	9 4	52.7	+ 36	− 3	− 2	+ 8	− 12‡	− 35	+ 7	− 18
1308	25	10.9	9 15	51.5	+ 25	+ 20	+ 19	− 30	− 31	− 47	+ 21	− 39
1309	13	13.2	9 9	51.2	+ 25	− 8	− 30	+ 7	− 7	− 25	− 11	− 12
1310		13.0	8 50	47.3	+ 30	− 22	− 1	+ 10	+ 14	− 26	+ 1	− 7
1312		12.8	8 53	44.0	+ 42	+ 41	+ 43	− 43	− 22	− 45	+ 42	− 39
1313		12.9	8 46	43.3	+ 29	− 31	+ 7	+ 11	− 12	− 8	+ 3	− 4
1314	3	11.8	9 0	43.2	+ 6	− 3	− 2	− 12‡	+ 4	− 7	+ 0	− 5
1315	9	12.7	9 5	37.3	− 21	− 5	− 22	− 7	+ 34	+ 13	− 17	+ 13
1317	5	10.7	9 3	36.1	+ 8	+ 19	+ 20	+ 21	− 32	+ 21	+ 17	+ 8
1318	17	13.8	9 12	33.1	+ 26	− 1	− 11	− 10	− 14	− 14	+ 1	− 13

Reduction to absolute P.M.: Δμ''α = − 0".006; Δμ''δ = + 0".007.

No.	diameter	α			δ			α			δ			ϰ	γ
		M₁	M₂	M₃	M₁	M₂	M₃	m₁	m₂	m₃	m₁	m₂	m₃		
1319	0r.844	− 0r.013	+ 0r.012	− 0r.153	− 0r.015	+ 0r.093	− 0r.014	− 0″.027	− 0″.009	+ 0″.002	+ 0″.009	+ 0″.005	− 0″.005	+ 25p.5	+ 7p.1
1320	0.845	− 9	+ 24	− 145	+ 11	+ 77	+ 59	− 24	− 4	+ 6	+ 22	− 3	+ 20	+ 25.7	+ 8.2
1321	0.466	+ 46	+ 67	− 175	+ 59	+ 136	+ 12	+ 3	+ 16	− 6	+ 48	+ 24	+ 5	+ 25.1	+ 10.4
1322	0.619	+ 23	− 11	− 165	+ 58	+ 79	+ 9	− 6	− 22	− 7	+ 50	− 3	+ 5	+ 22.7	+ 12.1
1323	0.625	− 6	+ 23	− 200	+ 39	+ 87	− 8	− 20	− 6	− 17	+ 42	0	− 1	+ 23.6	+ 13.2
1324	0.602	+ 9	+ 65	− 203	− 11	+ 104	+ 12	− 10	+ 14	− 20	+ 20	+ 7	+ 7	+ 22.7	+ 14.9
1325	0.819	− 27	+ 42	− 158	− 29	+ 96	+ 16	− 25	− 0	− 3	+ 15	+ 1	+ 9	+ 23.6	+ 18.2
1327	0.599	+ 101	+ 55	− 188	+ 7	+ 144	+ 16	+ 38	+ 6	− 12	+ 33	+ 24	+ 9	+ 24.4	+ 18.9
1329	0.826	− 22	+ 26	− 194	− 95	+ 127	+ 5	− 17	− 12	− 10	− 12	+ 14	+ 5	+ 26.3	+ 23.3
1330	0.753	− 29	+ 32	− 175	− 99	+ 92	− 2	− 19	− 15	− 5	− 9	− 5	+ 3	+ 24.8	+ 25.5
1331	0.504	− 34	+ 53	− 154	− 95	+ 166	+ 21	− 21	+ 1	0	− 6	+ 31	+ 10	+ 24.0	+ 25.8
1335	0.621	− 21	+ 70	− 200	− 116	+ 86	− 18	− 13	+ 8	− 16	− 13	− 9	− 4	+ 23.7	+ 28.6
1336	0.859	− 36	+ 58	− 162	− 133	+ 114	+ 8	− 20	+ 1	− 1	− 21	+ 4	+ 5	+ 24.9⁵	+ 28.9
1337	0.492	+ 34	+ 76	− 150	− 64	+ 88	− 18	+ 14	+ 11	+ 1	+ 13	− 8	− 4	+ 23.9	+ 29.1
1338	0.633	− 16	+ 51	− 163	− 70	+ 117	− 7	− 8	− 3	− 1	+ 12	+ 5	− 1	+ 25.2	+ 30.1
1339	0.527	+ 20	+ 68	− 173	− 105	+ 114	+ 12	+ 10	+ 5	− 9	− 2	+ 3	+ 5	+ 23.1	+ 32.1
1340	0.484	+ 28	+ 39	− 167	− 76	+ 118	− 20	+ 16	− 11	− 2	+ 14	+ 4	+ 6	+ 25.3	+ 33.1
1341	0.454	+ 32	+ 75	− 186	+ 18	+ 51	− 21	+ 26	+ 1	− 5	+ 71	− 32	− 12	+ 26.5	+ 40.2
1342	0.495	+ 96	+ 74	− 145	+ 77	+ 93	+ 90	+ 59	+ 2	+ 3	+ 30	− 12	+ 24	+ 23.6	+ 41.7
1343	0.623	+ 53	+ 70	− 173	+ 158	+ 136	− 36	+ 47	− 5	− 7	+ 9	+ 5	− 31	+ 23.5	+ 50.9
1344	0.510	+ 124	+ 137	− 83	− 131	+ 174	− 15	+ 83	+ 25	+ 30	+ 21	+ 23	− 23	+ 26.2	+ 51.1

ϰ = 2h 8m 4s to ϰ = 2h 8m 46s.

No.	diameter	α			δ			α			δ			ϰ	γ
		M₁	M₂	M₃	M₁	M₂	M₃	m₁	m₂	m₃	m₁	m₂	m₃		
1346	0.688	+ 100	+ 84	− 126	+ 5	− 100	− 607	− 11	+ 59	+ 13	+ 16	− 49	+ 69	+ 29.2	− 56.8
1347	0.728	+ 67	+ 4	− 230	− 1	+ 61	+ 291	− 21	+ 13	+ 14	+ 3	+ 19	+ 1	+ 32.4	− 45.2
1348	0.480	+ 93	− 12	− 195	+ 56		+ 280	− 8	+ 4	+ 3	+ 30		+ 3	+ 32.1	− 42.7
1349	0.527	+ 152	+ 16	− 170	+ 35	+ 6	+ 287	+ 22	+ 18	+ 6	+ 20	− 9	+ 7	+ 31.6	− 42.5
1351	0.600	+ 155	+ 26	− 193	+ 5	+ 62	+ 234	+ 24	+ 22	− 7	+ 4	+ 17	− 4	+ 29.4	− 39.9
1353	1.437	+ 101	+ 37	− 140	+ 29	+ 44	+ 228	− 2	+ 27	+ 9	+ 16	− 9	− 3	+ 28.0	− 38.7
1354	0.712	+ 73	+ 57	− 188	+ 32	+ 75	+ 202	− 14	+ 35	− 0	− 15	+ 20	− 5	+ 31.9	− 36.6
1355	0.661	+ 155	+ 12	− 146	− 59	+ 29	+ 203	+ 27	+ 12	+ 7	− 29	− 2	+ 2	+ 28.4	− 34.3
1356	0.426		+ 211	+ 6		− 122	− 16		+ 105	+ 71		− 81	− 59	+ 32.7	− 28.0⁵
1357	1.126	+ 198	+ 141	+ 73	− 18	+ 42	+ 46	+ 52	+ 71	+ 95	− 10	− 42	− 38	+ 32.7	− 28.0
1358	0.861	+ 91	+ 4	− 147	+ 1	+ 31	+ 124	+ 0	+ 4	+ 9	− 0	− 6	− 8	+ 28.8	− 27.1
1359	0.558	+ 116	− 15	− 232	+ 36	+ 88	+ 81	+ 14	− 7	+ 15	+ 16	+ 19	+ 18	+ 31.5	− 25.3
1360	0.629	+ 126	− 10	− 153	+ 12	+ 61	+ 153	+ 19	− 4	+ 7	+ 5	+ 7	+ 8	+ 28.8	− 24.4
1361	0.596	+ 146	− 28	− 245	− 45	+ 30	+ 90	+ 29	− 14	− 25	− 23	− 9	− 9	+ 28.8	− 22.3
1362	0.733	+ 83	+ 42	− 181	− 7	+ 49	+ 76	+ 0	+ 20	− 4	− 4	0	− 12	+ 28.3	− 20.8
1363	0.499	+ 79	+ 57	− 234	− 65	+ 5	− 20	+ 2	+ 22	− 15	− 31	− 27	− 34	+ 31.1	− 15.0
1364	0.452	+ 112	+ 2	− 170	− 20	+ 51	+ 8	+ 21	− 6	+ 7	− 8	− 6	− 19	+ 30.7	− 11.9
1366	0.597	+ 138	+ 55	− 184	+ 39	+ 68	+ 43	+ 36	+ 18	+ 4	+ 21	0	− 2	+ 32.1	− 9.0
1367	0.672	+ 60	+ 38	− 161	− 35	+ 98	+ 35	+ 3	+ 6	+ 5	− 8	+ 11	+ 6	+ 28.4	− 0.3
1368	0.574	− 34	− 10	− 226	− 45	+ 58	+ 73	− 41	− 19	− 8	− 14	− 10	+ 20	+ 32.4	+ 0.2
1369	0.708	+ 15	+ 19	− 233	− 10	+ 109	+ 31	− 16	− 5	− 16	+ 5	+ 15	+ 6	+ 30.0	+ 1.8
1370	0.934	− 153	− 100	− 435	− 162	− 50	− 168	− 95	− 66	− 82	− 67	− 65	− 61	+ 32.0	+ 4.6
1371	0.528	− 23	− 8	− 182	− 7	+ 103	+ 28	− 33	− 19	− 1	+ 10	+ 10	+ 7	+ 29.0	+ 5.2
1372	0.940	+ 52	+ 63	− 136	− 22	+ 124	+ 29	+ 7	+ 12	+ 21	+ 4	+ 18	+ 10	+ 30.9	+ 7.8
1373	0.618	+ 50	+ 64	− 152	− 37	+ 121	+ 54	+ 7	+ 12	+ 17	− 3	+ 16	+ 20	+ 32.1	+ 8.6
1374	0.626	− 13	+ 46	− 176	+ 24	+ 100	+ 45	− 21	+ 2	+ 5	+ 31	+ 5	+ 18	+ 29.9	+ 11.9
1375	0.603	− 27	+ 37	− 186	− 9	+ 80	+ 63	− 28	− 2	+ 2	+ 17	− 5	+ 25	+ 28.8	+ 13.0
1376	0.641	− 5	+ 35	− 189	− 19	+ 109	+ 37	− 17	− 3	+ 5	+ 13	+ 8	+ 17	+ 27.5	+ 14.4
1377	0.624	− 26	+ 2	− 159	− 63	+ 82	+ 26	− 23	− 22	+ 8	− 5	− 6	+ 13	+ 28.7	+ 17.2
1378	0.582	+ 11	+ 1	− 210	+ 8	+ 108	+ 43	− 2	− 26	− 3	+ 31	+ 4	+ 20	+ 31.7	+ 18.8
1379	0.719	− 35	+ 32	− 185	+ 51	+ 128	+ 17	− 20	− 13	+ 1	+ 11	+ 12	+ 10	+ 29.4	+ 24.8
1380	0.698	+ 57	+ 151	− 67	− 62	+ 108	− 3	+ 27	+ 45	+ 41	+ 9	+ 1	+ 2	+ 28.7	+ 26.7
1381	0.546	+ 109	+ 39	− 245	+ 73	+ 134	+ 10	+ 54	− 11	− 23	+ 7	+ 13	+ 6	+ 28.1	+ 28.8
1382	0.642	+ 74	+ 188	− 58	− 108	+ 43	− 100	+ 37	+ 62	+ 43	− 10	− 31	− 32	+ 28.0	+ 29.2
1383	0.787	− 11	+ 39	− 221	− 69	+ 166	+ 4	− 1	− 14	− 8	+ 12	+ 27	+ 3	+ 30.5	+ 30.8
1384	0.568	+ 87	+ 84	− 127	− 76	+ 168	− 7	+ 47	+ 9	+ 19	+ 12	+ 28	+ 3	+ 28.2	+ 32.7
1385	0.669	+ 32	+ 62	− 208	− 62	+ 159	+ 8	+ 21	− 3	− 7	+ 18	+ 23	+ 4	+ 29.4	+ 32.9
1386	0.664	+ 31	+ 49	− 104	− 91	+ 124	− 15	+ 20	− 9	+ 28	+ 4	+ 6	− 4	+ 28.5	+ 33.9
1387	0.574	− 25	+ 8	− 259	− 104	+ 75	− 75	0	− 34	− 20	+ 7	− 20	− 29	+ 31.2	+ 38.4

No.	B. D. or Br.—St.	Mag.	1900.0 α	1900.0 δ	α μ₁	α μ₂	α μ₃	δ μ₁	δ μ₂	δ μ₃	μ″α	μ″δ
1319	2	10.8	2h 9m 0s	56° 32′.4	− 0″.022	− 0″.008	0″.000	+ 0″.001	+ 0″.006	− 0″.007	− 0″.007	− 0″.002
1320		10.8	8 58	31.4	− 19	− 3	+ 4	+ 12	− 2	+ 18	− 3	+ 11
1321	1764	13.7	9 3	29.2	+ 8‡	+ 17	− 8‡	+ 38	+ 25	+ 3	+ 2	+ 17
1322	30	12.4	9 20	27.5	− 1	− 21	− 9	+ 40	− 2	+ 4	− 10	+ 11
1323	20	12.3	9 14	26.4	− 15	− 5	− 19	+ 32	+ 1	− 2	− 14	+ 7
1324	31	12.5	9 21	24.8	− 6	+ 15	− 22	+ 10	+ 8	+ 6	− 9	+ 7
1325	22	11.0	9 14	21.5	− 21	+ 1	− 5	+ 4	+ 2	+ 8	− 7	+ 5
1327	12	12.5	9 8	20.8	+ 42	+ 8	− 14	+ 22	+ 25	+ 7	+ 5	+ 15
1329		10.9	8 55	16.3	− 13	− 10	− 12	− 23	+ 14	+ 3	− 12	− 1
1330	11	11.4	9 6	14.2	− 16	− 13	− 7	− 20	− 5	+ 2	− 11	− 5
1331	18	13.4	9 12	13.9	− 18‡	+ 3	− 2‡	− 17	+ 31	+ 9	− 5	+ 8
1335	24	12.4	9 14	11.2	− 10	+ 10	− 18	− 24	− 9	− 5	− 9	− 11
1336	1765	10.7	9 5	10.8	− 17	+ 3	− 3	− 32	+ 4	+ 4	− 5	− 5
1337	1775	13.5	9 13	10.7	+ 17‡	− 13	− 1	+ 2	− 8	− 5	+ 7	− 4
1338	7	12.3	9 4	9.6	− 5	− 1	− 3	+ 1	+ 5	− 2	− 3	0
1339	1782	13.2	9 19	7.7	+ 12	+ 7	− 11	− 14	+ 3	+ 5	− 1	0
1340	6	13.6	9 3	6.7	+ 18	− 8	− 5	+ 2	+ 4	− 7‡	0	− 2
1341		13.8	8 55	55° 59′.6	+ 27‡	− 4	− 8	+ 59‡	− 33‡	− 12	+ 4	0
1342	26	13.5	9 16	58.1	+ 59‡	+ 5	0	+ 18	− 13	+ 25‡	+ 16	+ 14
1343		12.3	9 17	48.9	+ 45‡	− 1	− 10‡	− 5‡	+ 4	− 28‡	+ 6	− 14
1344		13.3	8 58	48.7	+ 81‡	+ 29	+ 27‡	+ 8‡	+ 22‡	− 21‡	+ 41	− 3

α = 2h 8m 4s to α = 2h 8m 46s.

No.	B. D. or Br.—St.	Mag.	1900.0 α	1900.0 δ	α μ₁	α μ₂	α μ₃	δ μ₁	δ μ₂	δ μ₃	μ″α	μ″δ
1346		11.8	2h 8m 27s	57° 36′.0	− 12‡	+ 58‡	+ 9‡	+ 6‡	− 46	+ 77‡	+ 16	+ 28
1347		11.5	8 4	24.4	− 19‡	+ 12	− 18‡	− 6‡	+ 21	+ 5‡	− 11	+ 6
1348		13.6	8 7	21.9	− 6‡	+ 3‡	− 7‡	+ 21‡		+ 7‡	− 4	+ 12
1349		13.2	8 11	21.7	+ 24	+ 17	+ 2	+ 11‡	− 7‡	+ 11‡	+ 11	+ 6
1351		12.5	8 27	19.1	+ 27	+ 21	− 10	− 5	+ 19	0	+ 7	+ 3
1353	57°.525	8.2	8 37	18.0	+ 1	+ 26	+ 6	+ 7	+ 11	0	+ 10	+ 4
1354		11.7	8 9	15.9	− 11	+ 34	− 4	− 24	+ 22	− 3	+ 4	− 2
1355		12.0	8 35	13.6	+ 30	+ 11	+ 4	− 38	0	+ 4	+ 12	− 7
1356		14.0	8 4	7.4		+ 104‡	+ 67‡		− 79‡	− 59‡	+ 79	− 66
1357	56°.461	9.4	8 4	7.3	+ 57	+ 70	+ 91	− 18	− 40	− 38	+ 77	− 33
1358		10.7	8 33	6.4	+ 5	+ 3	+ 6	− 9	− 4	− 7	+ 5	− 7
1359		12.9	8 13	4.6	+ 19	− 8	− 18	+ 8	+ 21	− 18	− 6	− 2
1360		12.3	8 33	3.7	+ 24	− 5	+ 4	− 4	+ 9	+ 8	+ 7	+ 5
1361		12.6	8 33	1.7	+ 34	− 14	− 28	− 32	− 7	− 9	− 9	− 14
1362		11.5	8 37	0.2	+ 5	+ 20	− 7	− 13	+ 2	− 12	+ 3	− 9
1363		13.4	8 17	56° 54′.4	+ 8	+ 22‡	− 18	− 40	− 26	− 36	− 1	− 34
1364		13.9	8 20	51.3	+ 27	− 6	+ 4	− 17	− 5	− 21	− 7	− 16
1366		12.6	8 10	48.4	+ 42	+ 18	+ 1	+ 12	+ 1	− 5	+ 15	+ 1
1367		11.9	8 38	39.8	+ 9	+ 7	+ 2	− 17	+ 12	+ 4	+ 5	+ 1
1368		12.7	8 9	39.3	− 35	− 18	− 11	− 23	− 9	+ 16	− 19	0
1369		11.7	8 27	37.7	− 10	− 4	− 19	− 4	+ 16	+ 3	− 13	+ 4
1370		10.3	8 12	34.9	− 89	− 65	− 85	− 76	− 64	− 65	− 81	− 67
1371		13.2	8 34	34.3	− 27	− 18	− 4	+ 1	+ 11	+ 4	− 13	+ 5
1372	56°.463	10.3	8 21	31.8	+ 13	+ 13	+ 18	− 5	+ 19	+ 6	+ 15	+ 6
1373		12.4	8 12	31.0	+ 13	+ 13	+ 14	− 12	+ 16	+ 16	+ 13	+ 9
1374		12.3	8 28	27.7	− 15	+ 3	+ 2	+ 21	+ 5	+ 15	− 2	+ 14
1375		12.5	8 36	26.6	− 23	− 1	− 5	+ 7	− 4	+ 22	− 8	+ 12
1376		12.2	8 46	25.2	− 12	− 2	− 8	+ 3	+ 9	+ 14	− 7	+ 10
1377		12.3	8 37	22.4	− 18	− 20	+ 5	− 15	− 6	+ 10	− 7	0
1378		12.7	8 16	20.8	+ 3	− 24	− 6	+ 21	+ 4	+ 16	− 8	+ 14
1379		11.6	8 33	14.9	− 16	− 11	− 2	0	+ 12	+ 7	− 8	+ 6
1380		11.7	8 38	13.0	+ 30	+ 47	+ 38	− 2	+ 1	− 1	+ 38	− 1
1381		13.0	8 43	10.9	+ 57‡	− 9	− 26	− 4‡	+ 13‡	− 4	− 1	+ 4
1382		12.2	8 43	10.5	+ 40	+ 65	+ 40	− 21	+ 31	− 34	+ 46	− 30
1383		11.1	8 26	8.9	+ 2	− 11	− 11	+ 1	+ 27	0	− 8	+ 7
1384		12.8	8 42	7.0	+ 50‡	+ 12	+ 16	+ 1‡	+ 28	+ 1	+ 23	+ 8
1385		12.0	8 34	6.8	+ 24	0	− 10	+ 7	+ 22	+ 2	+ 1	+ 8
1386		12.0	8 40	5.8	+ 22	− 6	+ 25	− 7	+ 6	− 6	+ 16	− 3
1387		12.7	8 21	1.3	+ 2	− 31‡	− 24	− 5‡	− 21	− 31‡	− 19	− 22

Reduction to absolute P.M. : $\Delta \mu''_\alpha = -0''.006$; $\Delta \mu''_\delta = +0''.007$.

No.	diameter	α M₁	α M₂	α M₃	δ M₁	δ M₂	δ M₃	α m₁	α m₂	α m₃	δ m₁	δ m₂	δ m₃	z	γ
1391	0r.684	+ 0r.061	+ 0r.083	− 0r.154	− 0r.084	+ 0r.125	− 0r.004	+ 0″.044	+ 0″.002	+ 0″.010	+ 0″.025	+ 0″.003	− 0″.008	+ 28p.4	+ 41p.7
1392	0.475	+ 68	+ 127	− 123	− 71	+ 113	− 16	+ 50	+ 21	+ 25	+ 32	− 4	− 13	+ 30.3	+ 43.0
1393	0.721	+ 25	+ 116	− 160	− 126	+ 142	+ 1	+ 6	+ 15	+ 15	+ 6	+ 10	− 8	+ 30.8	+ 43.7
1394	0.556	− 23	+ 61	− 130	− 107	+ 178	+ 27	+ 8	− 11	+ 20	+ 21	+ 27	− 2	+ 28.7	+ 46.2
	α = 2h 7m 26s to α = 2h 8m 10s.														
1396	0.934	− 12	+ 28	− 163	+ 4	+ 61	+ 241	− 59	+ 23	+ 13	+ 5	+ 17	− 11	+ 34.2	− 43.3
1398	0.603	+ 68	+ 45	− 239	− 6		+ 186	− 17	+ 29	− 5	− 2		− 23	+ 37.6	− 41.1
1399	0.526	+ 63	+ 38	− 186	+ 12	− 7	+ 274	− 20	+ 26	+ 12	+ 7	− 19	+ 8	+ 37.1	− 40.8
1400	0.752	+ 76	− 4	− 227	− 2	+ 39	+ 261	− 14	− 6	− 8	+ 0	+ 4	+ 6	+ 34.5	− 39.9
1401	1.002	+ 37	− 18	− 210	+ 10	+ 44	+ 118	− 29	− 5	− 2	+ 4	+ 2	− 24	+ 34.2	− 33.3
1402	0.833	0	− 19	− 229	− 22	+ 58	+ 137	− 43	− 8	− 8	− 13	+ 6	− 6	+ 34.4	− 28.2
1403	0.483	+ 56	+ 23	− 235	− 66	+ 23	+ 39	− 14	+ 10	− 13	− 34	− 14	− 31	+ 33.2	− 23.8
1404	0.550	+ 38	+ 13	− 232	+ 59	+ 43	+ 43	− 21	+ 3	− 7	+ 26	− 5	− 26	+ 35.1	− 22.5
1405	0.782	+ 26	+ 23	− 230	+ 19	+ 55	+ 37	− 26	− 8	− 8	− 11	+ 0	− 25	+ 33.8	− 21.0
1406	0.713	+ 216	+ 138	− 2	+ 22	+ 47	− 15	+ 70	+ 61	+ 74	+ 9	− 7	− 35	+ 35.0	− 16.8
1407	0.841	+ 13	+ 18	− 216	+ 19	+ 88	+ 42	− 22	− 3	− 3	− 6	+ 7	+ 2	+ 33.5	− 5.9
1408	1.079	− 67	+ 1	− 237	− 2	+ 46	+ 9	− 59	− 13	− 6	+ 2	− 15	− 8	+ 35.5	− 4.8
1409	0.739	+ 11	+ 13	− 241	+ 17	+ 64	+ 70	− 21	− 7	− 11	+ 13	− 6	+ 15	+ 33.4	− 3.4
1410	0.592	+ 49	+ 31	− 210	− 24	+ 107	− 49	− 0	+ 1	+ 1	− 5	+ 14	+ 10	+ 34.2	− 1.3
1411	0.650	+ 20	+ 11	− 242	− 9	+ 135	+ 71	− 9	− 14	− 5	+ 5	+ 24	+ 23	+ 36.3	+ 3.9
1412	0.590	− 1	+ 55	− 293	+ 23	+ 130	+ 63	− 13	+ 2	− 20	+ 26	+ 18	+ 24	+ 37.0	+ 10.4
1413	1.233	− 75	+ 19	− 204	− 39	+ 69	+ 42	− 50	− 13	0	0	− 11	+ 17	+ 32.6	+ 12.0
1414	0.586	+ 6	+ 48	− 182	+ 18	+ 95	− 37	− 9	+ 0	+ 11	+ 28	+ 1	+ 15	+ 33.4	+ 12.6
1415	0.902	− 43	− 10	− 210	− 36	+ 127	+ 61	− 30	− 21	+ 5	+ 3	+ 15	+ 25	+ 34.8	+ 15.1
1416	1.002	− 70	+ 70	− 218	− 59	+ 109	+ 33	− 42	+ 7	+ 2	+ 7	+ 5	+ 16	+ 34.8	+ 16.1
1417	0.863	− 46	+ 81	− 242	− 38	+ 93	+ 25	− 23	+ 7	− 1	+ 10	− 6	+ 14	+ 37.1	+ 22.1
1418	0.557	+ 33	+ 24	− 228	− 84	+ 98	− 7	+ 19	− 22	− 1	− 5	− 4	+ 1	+ 34.8	+ 26.6
1419	0.554	0	+ 75	− 254	− 65	+ 140	+ 69	+ 3	+ 2	+ 9	+ 4	+ 16	+ 28	+ 35.6	+ 26.9
1421	0.984	+ 32	+ 108	− 169	− 157	+ 62	− 16	+ 23	+ 17	+ 17	− 31	− 25	− 4	+ 33.4	+ 32.4
1422	0.772	− 33	+ 89	− 186	− 77	+ 125	− 4	− 8	− 8	+ 9	+ 9	+ 6	+ 0	+ 32.8	+ 33.2
1423	0.629	+ 52	+ 150	− 191	− 63	+ 140	+ 50	+ 34	+ 37	+ 8	+ 17	+ 13	+ 18	+ 32.7	+ 33.5
1424	0.542	+ 10	+ 64	− 250	− 33	+ 144	+ 20	+ 16	− 7	− 8	+ 32	+ 14	+ 7	+ 35.2	+ 34.4
1425	0.755	− 20	+ 89	− 219	− 58	+ 142	− 9	+ 4	− 2	+ 7	+ 21	+ 11	+ 7	+ 36.4	+ 37.5
1426	0.568	+ 2	+ 31	− 216	− 98	+ 135	− 36	+ 18	− 27	+ 2	+ 12	+ 7	+ 17	+ 33.9	+ 40.6
1427	0.654	+ 25	+ 119	− 221	− 70	+ 153	+ 20	+ 30	+ 15	+ 1	+ 26	+ 16	+ 1	+ 34.5	+ 41.1
1428	0.747	− 7	+ 63	− 252	− 61	+ 141	− 9	+ 18	− 14	− 8	+ 35	+ 9	− 10	+ 35.3	+ 43.4
1429	0.900	+ 17	+ 56	− 225	− 112	+ 133	− 28	+ 31	− 19	+ 1	+ 13	+ 4	− 19	+ 35.1	+ 44.7
	α = 2h 6m 53s to α = 2h 7m 37s.														
1431	1.373	+ 91	+ 171	− 53	− 77	− 128	− 62	− 8	+ 93	+ 65	− 35	− 76	− 82	+ 40.1	− 46.1
1432	0.745	+ 99	+ 77	− 255	+ 22	− 5	+ 224	− 1	+ 44	− 1	+ 11	− 19	− 13	+ 41.4	− 42.0
1433	1.034	− 35	− 9	− 338	0	+ 9	+ 69	− 62	− 2	− 31	− 2	− 17	− 44	+ 41.2	− 33.7
1434	0.940	+ 36	− 7	− 369	+ 11	+ 32	+ 68	− 25	− 3	− 38	+ 1	− 8	− 38	+ 42.3	− 32.1
1435	0.804	− 10	− 12	− 355	− 27	+ 39	− 73	− 49	− 5	− 41	− 16	− 4	− 35	+ 39.1	− 31.0
1436	0.816	+ 15	+ 8	− 339	+ 9	+ 29	+ 2	− 32	− 0	− 30	− 0	− 14	− 44	+ 40.7	− 24.6
1437	1.084	+ 17	+ 9	− 299	− 10	+ 53	− 8	− 45	− 10	− 13	− 9	− 4	− 44	+ 41.7	− 22.7
1438	0.739	− 18	+ 14	− 239	− 2	+ 56	− 52	− 36	− 7	+ 7	− 3	− 9	+ 1	+ 41.3	− 9.4
1439	0.793	+ 44	+ 92	− 166	− 75	+ 33	− 2	− 5	+ 31	+ 31	− 38	− 20	− 17	+ 40.5	− 9.2
1440	0.665	+ 57	+ 30	− 242	+ 4	+ 26	+ 23	− 0	+ 2	+ 2	+ 2	− 22	− 8	+ 37.7	− 9.2
1441	0.863	+ 17	+ 29	− 229	− 21	+ 50	+ 30	− 36	− 0	+ 7	− 10	− 12	− 5	+ 39.6	− 8.5
1442	0.818	+ 7	+ 7	− 217	− 40	+ 69	− 52	− 22	− 11	+ 14	− 20	− 3	+ 3	+ 40.5	− 8.3
1443	0.656	+ 76	+ 20	− 278	− 12	+ 64	+ 73	+ 11	− 5	− 10	− 5	− 6	+ 12	+ 39.5	− 7.3
1444	0.643	+ 65	+ 77	− 246	0	+ 103	+ 73	+ 8	+ 20	+ 8	+ 0	+ 12	+ 13	+ 42.2	− 5.8
1445	0.646	+ 25	+ 37	− 181	+ 8	+ 83	+ 35	− 11	+ 1	+ 28	+ 5	+ 1	+ 1	+ 41.2	− 4.9
1447	0.658	+ 51	+ 76	− 199	+ 11	+ 70	+ 3	+ 12	+ 13	+ 15	+ 18	+ 11	+ 3	+ 37.8	+ 9.2
1448	0.480	+ 97	+ 102	− 211	− 39	+ 102	− 38	+ 37	+ 23	+ 13	− 4	+ 3	+ 17	+ 38.6	+ 11.4
1449	0.868	− 60	+ 63	− 245	− 42	+ 71	+ 2	− 32	− 1	+ 6	+ 1	− 15	+ 6	+ 40.4	+ 17.7
1450	0.760	+ 27	+ 45	− 285	− 34	+ 47	+ 30	+ 11	− 11	− 8	+ 6	− 28	+ 16	+ 39.9	+ 18.9
1451	0.576	− 15	+ 16	− 250	+ 19	+ 54	+ 75	− 9	− 24	− 3	+ 36	− 24	+ 31	+ 37.2	+ 20.8
1452	0.606	0	+ 25	− 241	− 11	+ 114	+ 79	+ 1	− 22	+ 8	+ 20	+ 4	+ 33	+ 40.5	+ 21.1
1454	0.493	− 21	+ 81	− 231	− 95	+ 114	− 45	− 9	+ 6	+ 3	− 15	+ 4	+ 21	+ 37.2	+ 23.9
1455	0.462	− 12	+ 109	− 307	− 75	+ 108	+ 131	− 2	+ 18	− 18	− 6	+ 0	+ 51	+ 38.8	+ 24.5
1456	0.775	+ 34	+ 66	− 247	− 25	+ 146	+ 58	− 13	− 3	+ 1	+ 20	+ 18	+ 25	+ 38.4	+ 24.8

No.	B. D. or Br.—St.	Mag.	1900.0 α	δ	α μ₁	α μ₂	α μ₃	δ μ₁	δ μ₂	δ μ₃	μ''α	μ''δ
1391		11.8	2h 8m 42s	55° 58'.1	+ 0".045	+ 0".006	+ 0".007‡	+ 0".013‡	+ 0".002	− 0".009‡	+ 0.016	− 0".001
1392		13.6	8 28	56.8	+ 51	+ 25	+ 21‡	+ 20‡	− 5	− 14‡	+ 29	− 3
1393		11.6	8 24	56.1	+ 7	+ 19	+ 11‡	− 6‡	+ 9	− 10‡	+ 12	− 4
1394		12.9	8 40	53.6	+ 8	− 7	+ 17‡	+ 8‡	+ 26	− 2‡	+ 9	+ 7
	α = 2h 7m 26s to		α = 2h 8m 10s.									
1396		10.3	2h 7m 51s	57° 22'.5	− 56	+ 22	+ 8‡	− 4‡	+ 19	− 8‡	− 4	0
1398		12.5	7 26	20.3	− 14‡	+ 28	− 10‡	− 10‡	−	− 21‡	− 1	− 17
1399		13.2	7 30	20.1	− 17‡	+ 25‡	+ 7‡	− 1‡	− 17‡	+ 10‡	+ 5	0
1400		11.4	7 50	19.2	− 11	+ 5	− 12‡	+ 8	+ 6	+ 8‡	− 7	+ 3
1401	56°.458	10.0	7 52	12.6	− 25	− 6	− 6	+ 4	+ 4	− 23‡	− 11	− 11
1402		10.9	7 51	7.5	− 38	− 9	− 12	+ 5	+ 7	− 6	− 18	0
1403		13.6	8 1	3.2	− 8	+ 9	− 17	− 42	− 13	− 32	− 8	− 30
1404		13.0	7 47	1.9	− 15‡	+ 3	− 11	+ 18	− 4	− 28	− 8	− 10
1405		11.2	7 57	0.4	− 20	+ 8	− 12	− 19	+ 1	− 27	− 9	− 18
1406		11.6	7 48	56° 56'.2	+ 76	+ 61	+ 70	+ 1	− 6	− 38	+ 69	− 20
1407	56°.460	10.8	8 1	45.4	− 15	− 3	− 7	− 14	+ 8	− 2	− 8	− 2
1408	56°.456	9.6	7 46	44.3	− 52	− 12	− 10	− 6	− 14	− 12	− 21	− 11
1409		11.5	8 2	42.9	− 14	− 6	− 15	+ 4	− 5	+ 11	− 12	+ 5
1410		12.6	7 56	40.8	+ 7	+ 2	− 3	− 14	+ 15	+ 6	+ 1	+ 3
1411		12.1	7 41	35.6	− 2	− 13	− 9	− 3	+ 24	+ 18	− 8	+ 14
1412		12.6	7 37	29.2	− 6	+ 4	− 24‡	+ 17	+ 18	+ 18‡	− 12	+ 18
1413	56°.462	9.0	8 9	27.6	− 44	− 11	− 3	− 9	− 11	+ 12	− 15	+ 1
1414		12.6	8 3	27.0	− 3	+ 2	+ 7	+ 19	+ 1	+ 10	+ 3	+ 10
1415	56°.459	10.5	7 54	24.5	− 24	− 19	+ 1	− 6	+ 15	+ 20	− 10	+ 12
1416	56°.457	10.0	7 54	23.5	− 36	+ 9	− 2	+ 16	+ 5	+ 11	− 8	+ 3
1417	56°.455	10.7	7 38	17.5	− 17	+ 10	− 5	+ 1	− 7	+ 8	− 4	+ 2
1418		12.9	7 55	13.1	+ 24	− 19	− 5	− 15	− 5	− 4	− 1	− 7
1419		12.9	7 49	12.8	+ 8	+ 5	− 13	− 6	+ 15	+ 23	− 3	+ 14
1421	55°.549	10.1	8 5	7.3	+ 26	+ 20	+ 13	− 42	− 26	− 8	+ 18	− 21
1422	55°.550	11.2	8 9	6.5	− 5	+ 11	+ 5	− 2	+ 5	− 4	− 4	− 1
1423		12.3	8 10	6.2	+ 37	+ 40	+ 4	+ 6	+ 12	+ 14	+ 21	+ 11
1424		13.0	7 53	5.3	± 19	− 3	− 12‡	+ 21	+ 13‡	+ 3	− 2	+ 10
1425		11.3	7 44	2.2	+ 7	+ 6	+ 2‡	+ 10‡	+ 10	+ 2‡	+ 4	+ 6
1426		12.8	8 2	55° 59'.1	+ 20	− 23‡	− 2‡	+ 1‡	± 6‡	− 21‡	− 2	− 9
1427		12.1	7 58	58.6	+ 32	+ 19	− 3‡	+ 15‡	+ 15	− 3‡	+ 11	+ 6
1428		11.4	7 53	56.4	+ 19	− 10	− 13‡	+ 23‡	+ 7	− 14‡	− 4	0
1429	55°.548	10.5	7 54	55.1	+ 32	− 15	− 4‡	+ 1‡	+ 2	− 22‡	+ 2	− 10
	α = 2h 6m 53s to		α = 2h 7m 37s.									
1431	57°.521	8.5	2h 7m 8s	57° 25'.2	− 5‡	+ 91	+ 59‡	− 43‡	− 75	− 79‡	+ 51	− 69
1432		11.4	6 58	21.1	+ 3‡	+ 43	− 7‡	+ 4‡	− 18‡	− 12‡	+ 8	− 9
1433	56°.454	9.8	7 1	12.9	− 57‡	− 3	− 37	− 9‡	− 16	− 45‡	− 33	− 29
1434		10.3	6 53	11.3	− 19‡	− 4	− 44‡	− 6‡	− 7	− 40‡	− 28	− 23
1435		11.0	7 17	10.2	− 43‡	− 6	− 46‡	− 23‡	− 3	− 36‡	− 35	− 24
1436		11.0	7 6	3.9	− 26‡	− 1	− 35‡	− 7‡	− 13‡	− 47	− 24	− 28
1437	56°.453	9.6	6 59	2.0	− 38	− 10	− 18	− 16	− 4	− 48	− 21	− 29
1438		11.5	7 4	56° 48'.7	− 28	− 7	+ 2	− 10	− 9	− 5	− 8	− 7
1439		11.1	7 9	48.5	+ 3	+ 31	+ 26	− 45	− 20	− 23	+ 21	− 28
1440		12.0	7 30	48.5	+ 7	+ 2	− 7	− 6	− 21	− 13	− 1	− 13
1441		10.7	7 16	47.8	− 28	0	+ 2	− 17	− 12	− 10	− 6	− 12
1442		11.0	7 9	47.6	− 14	− 10	+ 9	− 27	− 3	− 3	− 1	− 9
1443		12.1	7 17	46.7	+ 19‡	− 4	− 15	− 12	− 6	+ 6	− 4	− 1
1444		12.2	6 58	45.2	± 16	+ 21	+ 2‡	− 7	+ 12	+ 6	+ 10	+ 4
1445		12.1	7 5	44.3	− 3	+ 2	+ 23	− 2	+ 1	− 6	+ 11	− 3
1447		12.0	7 31	30.3	+ 19	+ 15	+ 10	+ 10	− 11	− 4	+ 13	− 2
1448		13.6	7 26	28.1	+ 44	+ 25	+ 8‡	− 12	+ 3	+ 10	+ 21	+ 3
1449		10.7	7 14	21.8	− 25	+ 2	+ 1	− 8	− 16	− 2	− 5	− 7
1450		11.3	7 17	20.6	+ 17	− 8	− 13‡	− 3	− 29	+ 8	− 4	− 4
1451		12.7	7 37	18.7	− 3	− 21‡	− 8	+ 27	− 25	+ 24	− 10	+ 12
1452		12.5	7 13	18.4	+ 7‡	− 19	+ 3‡	+ 11‡	+ 3‡	+ 25	− 1	+ 16
1454		13.5	7 37	15.6	− 3	+ 9	− 2	+ 24	+ 3	+ 14	0	+ 2
1455		13.8	7 26	15.1	+ 4‡	+ 21‡	− 23	− 15‡	− 1‡	+ 44	− 5	+ 18
1456		11.2	7 29	14.8	− 7	0	− 4‡	+ 11‡	+ 17	+ 18‡	− 4	+ 16

Reduction to absolute P.M. : Δμ''α = − 0".006; Δμ''δ = + 0".007.

No.	diameter	α M₁	α M₂	α M₃	δ M₁	δ M₂	δ M₃	α m₁	α m₂	α m₃	δ m₁	δ m₂	δ m₃	z	γ
1457	0ʳ.696	+ 0ʳ.042	+ 0ʳ.110	− 0ʳ.228	− 0ʳ.037	+ 0ʳ.176	+ 0ʳ.060	+ 0″.030	+ 0″.014	+ 0″.014	+ 0″.018	+ 0″.031	+ 0″.025	+ 40ᵖ.5	+ 29ᵖ.0
1458	0.649	+ 36	+ 82	− 197	− 69	+ 113	+ 57	+ 27	0	+ 21	+ 6	0	+ 23	+ 38.8	+ 30.6
1459	0.449	− 117	+ 35	− 295	− 4	+ 97	+ 124	− 47	− 25	− 9	+ 38	− 9	+ 46	+ 40.6	+ 30.8
1460	0.433	+ 53	+ 94	− 243	0	+ 93	− 142	+ 41	+ 2	+ 10	+ 42	− 11	− 47	+ 40.9	+ 32.7
1461	0.680	− 8	+ 51	− 241	− 73	+ 107	+ 81	+ 11	− 19	+ 11	+ 6	− 4	+ 30	+ 41.2	+ 32.7
1462	0.579	+ 26	+ 85	− 240	+ 35	+ 154	+ 103	+ 26	− 1	+ 8	+ 60	+ 18	+ 38	+ 40.0	+ 33.0
1463	0.661	− 34	+ 126	− 230	− 25	+ 95	+ 94	− 3	+ 19	+ 12	+ 31	− 10	+ 35	+ 39.9	+ 33.1
1464	1.376	− 91	+ 75	− 244	− 130	+ 132	+ 45	− 25	− 10	+ 8	− 12	+ 6	+ 14	+ 40.3	+ 37.8
1465	0.508	+ 79	+ 110	− 286	− 36	+ 185	+ 98	+ 62	+ 4	− 4	+ 39	+ 30	+ 29	+ 40.8	+ 41.1
1466	0.595	+ 1	+ 97	− 208	− 71	+ 104	+ 57	+ 24	− 2	+ 19	+ 25	− 10	+ 14	+ 39.6	+ 42.4
	α = 2ʰ 6ᵐ 20ˢ to α = 2ʰ 6ᵐ 59ˢ.														
1468	0.736	+ 13	+ 49	− 318	− 28	+ 1	+ 172	− 41	+ 29	− 17	− 15	− 19	− 26	+ 43.9	− 40.5
1469	0.616	+ 92	+ 7	− 352	+ 8	+ 4	+ 243	− 3	+ 8	− 31	+ 2	− 17	+ 1	+ 43.3	− 39.9
1470	0.452			− 416	+ 133	− 29	+ 144			− 47	+ 62	− 35	− 32	+ 45.6	− 39.6
1471	0.705	+ 9	+ 63	− 383	+ 15	+ 43	+ 129	− 40	+ 32	− 35	+ 4	− 2	− 28	+ 45.4	− 36.1
1472	0.780	+ 10	+ 50	− 386	− 10	+ 22	+ 71	− 41	+ 27	− 43	− 7	− 11	− 48	+ 43.1	− 35.8
1474	0.748	+ 75	+ 24	− 244	+ 57	+ 69	+ 107	0	+ 6	+ 18	+ 21	+ 4	− 12	+ 46.8	− 26.6
1475	0.749	+ 64	+ 2	− 348	− 9	+ 13	− 38	− 7	− 4	− 26	− 10	− 22	− 32	+ 43.6	− 25.0
1476	0.967	− 32	− 2	− 255	+ 22	+ 54	+ 34	− 52	− 7	+ 7	+ 5	− 3	− 31	+ 44.2	− 23.7
1477	1.211	− 71	− 16	− 277	+ 24	+ 28	+ 63	− 71	− 14	+ 2	+ 7	− 16	+ 21	+ 43.4	− 23.6
1479	0.720	+ 26	+ 11	− 275	− 30	+ 33	+ 57	− 20	− 5	+ 1	− 20	− 17	− 11	+ 43.9⁵	− 18.2
1480	0.905	+ 19	+ 60	− 213	− 43	+ 49	+ 56	− 18	+ 16	+ 24	− 27	− 10	− 6	+ 47.2	− 15.2
1481	0.557	+ 15	− 1	− 275	+ 67	+ 62	+ 90	− 21	− 14	0	+ 29	− 5	+ 9	+ 43.5	− 12.7
1482	0.598	+ 37	+ 27	− 292	− 39	+ 50	+ 115	− 10	− 0	− 6	− 22	− 11	+ 20	+ 43.2	− 11.8
1483	0.562	+ 71	+ 130	− 288	+ 35	+ 96	+ 101	+ 18	+ 40	+ 4	+ 18	+ 4	+ 29	+ 45.7	− 1.0
1484	0.896	− 88	+ 34	− 270	− 2	+ 75	+ 90	− 58	− 8	+ 13	0	− 6	+ 27	+ 47.0	+ 0.1
1485	0.661	− 42	+ 101	− 245	− 8	+ 170	+ 106	− 29	+ 20	+ 16	+ 5	+ 36	+ 39	+ 44.5	+ 8.6
1486	0.440	+ 22	+ 77	− 298	+ 18	+ 85	+ 68	+ 10	+ 2	0	+ 25	− 9	+ 29	+ 44.8	+ 16.0
1487	0.625	− 42	+ 107	− 242	+ 15	+ 117	+ 69	− 15	+ 14	+ 15	+ 20	+ 4	+ 29	+ 42.9	+ 23.6
1488	0.654	− 3	+ 86	− 181	− 34	+ 147	+ 121	+ 14	− 4	+ 43	+ 19	+ 16	+ 46	+ 45.3	+ 30.0
1489	1.031	− 103	+ 62	− 204	− 47	+ 120	+ 72	− 35	− 16	+ 36	+ 12	+ 2	+ 29	+ 45.5	+ 30.1
1490	0.619	+ 43	+ 40	− 198	− 12	+ 113	+ 158	+ 38	− 28	+ 40	+ 31	− 2	+ 58	+ 45.9³	+ 32.1
1491	0.540	+ 36	+ 11	− 264	− 2	+ 159	+ 139	+ 34	+ 41	+ 10	+ 40	+ 20	+ 51	+ 43.6	+ 32.8
1492	1.211	+ 126	+ 88	− 223	− 85	+ 123	+ 46	+ 43	− 4	+ 28	− 1	+ 2	+ 18	+ 45.2	+ 33.3
1493	0.492	+ 148	+ 95	− 226	− 22	+ 154	+ 74	+ 93	− 2	+ 22	+ 38	+ 16	+ 25	+ 42.7	+ 37.1
1495	1.032	− 122	+ 80	− 250	− 95	+ 132	+ 87	− 36	− 12	+ 16	+ 4	+ 5	+ 29	+ 44.1	+ 38.9
	z = 2ʰ 5ᵐ 43ˢ to α = 2ʰ 6ᵐ 19ˢ.														
1496	1.229	− 127	+ 17	− 302	+ 50	− 11	+ 78	− 102	+ 5	+ 11	+ 18	− 33	− 40	+ 51.9	− 34.4
1497	0.800	− 25	+ 66	− 357	+ 48	+ 27	+ 89	− 48	+ 25	− 10	+ 16	− 17	− 23	+ 50.8	− 28.6
1498	0.642	+ 56	+ 29	− 342	+ 21	+ 46	+ 125	− 9	+ 7	− 12	+ 3	− 7	− 5	+ 48.4	− 26.6
1499	0.608	+ 35	+ 89	− 289	+ 7	+ 14	+ 72	− 16	+ 34	+ 9	− 4	− 25	− 17	+ 49.1	− 23.6
1500	0.574	+ 67	+ 52	− 250	+ 16	+ 35	+ 107	+ 2	+ 13	+ 29	− 1	− 17	+ 1	+ 51.3	− 21.4
1501	0.576	− 89	+ 21	− 385	+ 35	+ 30	+ 74	77	0	+ 27	+ 10	− 17	+ 13	+ 47.9⁵	− 21.7
1502	0.696	+ 115	+ 51	− 270	+ 85	+ 64	+ 176	+ 27	+ 11	+ 22	+ 33	+ 3	+ 29	+ 50.8	− 19.1
1503	1.024	− 113	+ 1	− 341	+ 53	+ 87	+ 59	+ 81	− 17	− 2	+ 34	+ 5	+ 4	+ 50.8	− 14.7
1504	0.590	+ 12	+ 48	− 304	− 11	+ 64	+ 91	− 17	+ 4	+ 14	+ 13	+ 7	+ 10	+ 52.0	− 13.3
1506	0.538	+ 45	+ 104	− 252	+ 12	+ 92	+ 113	0	+ 32	+ 29	− 1	+ 6	+ 20	+ 50.8	− 11.9
1507	0.539	+ 121	+ 126	− 135	− 6	+ 69	+ 54	+ 35	+ 44	+ 62	− 9	− 4	0	+ 48.3	− 11.4
1508	1.234	+ 207	+ 339	+ 98	+ 19	+ 90	+ 118	+ 84	+ 141	+ 153	+ 5	+ 2	+ 30	+ 51.3	− 6.3
1509	1.674	+ 442	+ 575	+ 487	− 408	− 335	− 574	+ 200	+ 256	+ 288	− 203	− 205	− 210	+ 50.8	− 5.3
1510	0.638	+ 9	+ 55	− 342	− 26	+ 69	+ 153	− 10	+ 1	+ 2	− 17	− 9	+ 45	+ 51.8	− 3.9
1511	0.557	− 27	+ 4	− 271	− 56	+ 70	+ 97	− 25	− 25	+ 21	− 28	− 10	+ 30	+ 50.1	− 0.2
1512	0.583	+ 60	+ 78	− 259	− 15	+ 133	+ 106	+ 17	+ 11	+ 23	− 6	+ 20	+ 34	+ 48.7	+ 0.8
1513	0.573	+ 39	+ 18	− 282	+ 20	+ 127	+ 58	+ 10	− 21	+ 24	+ 9	+ 16	+ 18	+ 52.0	+ 2.1
1514	0.669	− 34	+ 91	− 215	+ 2	+ 141	+ 117	− 16	+ 7	+ 43	+ 11	+ 18	+ 46	+ 50.3	+ 13.2
1515	0.858	− 50	+ 48	− 200	− 25	+ 143	+ 102	− 20	+ 16	+ 48	+ 1	+ 18	+ 42	+ 50.2	+ 15.9
1516	0.950	− 46	+ 49	− 215	+ 24	+ 121	+ 108	− 17	− 17	+ 46	+ 25	+ 7	+ 44	+ 51.2	+ 17.1
1517		+ 22	+ 69	− 266	+ 61	+ 83	+ 149	+ 17	− 8	+ 31	+ 43	− 12	+ 58	+ 51.7	+ 17.2
1518	0.897	− 93	+ 53	− 227	− 42	+ 140	+ 99	− 40	− 14	+ 35	− 2	+ 16	+ 41	+ 48.4	+ 19.1
1519	0.678	+ 17	+ 84	− 208	− 12	+ 114	+ 155	+ 19	− 4	+ 52	+ 11	+ 1	+ 61	+ 51.9	+ 20.5
1520	0.588	+ 60		− 159	+ 15	+ 174	+ 186	+ 42		+ 63	+ 31	+ 30	+ 71	+ 49.9	+ 24.2
1521	0.864	− 80	+ 71	− 251	− 3	+ 131	+ 105	− 23	− 14	+ 38	+ 22	+ 8	+ 43	+ 51.8	+ 25.4

No.	B. D. or Br.—St.	Mag.	1900.0 α	δ	α μ₁	α μ₂	α μ₃	δ μ₁	δ μ₂	δ μ₃	μ″α	μ″δ
1457		11.8	2h 7m 14s	56° 10′.6	+ 0″.035	+ 0″.018	+ 0″.009‡	+ 0″.009‡	+ 0″.030‡	+ 0″.017‡	+ 0″.018	+ 0″.018
1458		12.1	7 26	9.0	+ 32	+ 4	+ 16‡	— 4‡	— 1	+ 16‡	+ 17	+ 7
1459		13.9	7 14	8.8	— 42	— 21	— 15‡	+ 28‡	— 10	+ 38‡	— 23	+ 23
1460		14.0	7 11	6.9	+ 45	+ 6‡	+ 4‡	+ 32‡	— 13	— 55‡	+ 15	— 23
1461		11.9	7 9	6.9	+ 15	— 15	+ 5‡	— 4‡	— 6	+ 22‡	+ 2	+ 8
1462		12.7	7 18	6.6	+ 30	+ 3	+ 2‡	+ 50‡	+ 17	+ 31‡	+ 9	+ 32
1463		12.0	7 19	6.5	+ 1	+ 23	+ 6‡	+ 21‡	— 11	+ 28‡	+ 9	+ 16
1464	55°.547	8.5	7 16	1.8	— 22	— 6	+ 2‡	— 22‡	+ 4	+ 7‡	— 6	— 1
1465		13.3	7 13	55° 58′.6	+ 65‡	+ 9	— 10‡	+ 29‡	+ 28	+ 22‡	+ 13	+ 25
1466		12.6	7 22	57.2	+ 27‡	+ 3	+ 13‡	+ 14‡	— 12‡	+ 8‡	+ 14	+ 4
	α = 2h 6m 20s to α = 2h 6m 59s.											
1468		11.5	2h 6m 40s	57° 19′.6	— 36‡	+ 28	— 24‡	— 22‡	— 18	— 26‡	— 14	— 23
1469		12.4	6 45	19.0	+ 2‡	+ 7	— 38‡	— 5‡	— 16	+ 1‡	— 17	— 5
1470		13.9	6 28	18.7			— 54‡	+ 55‡	— 35‡	— 33‡	— 54	— 11
1471		11.7	6 30	15.2	— 34‡	+ 31	— 42‡	— 2‡	— 2	— 30‡	— 22	— 16
1472		11.2	6 47	14.9	— 35‡	+ 26	— 49‡	— 14‡	— 10	— 49‡	— 27	— 30
1474		11.4	6 21	5.7	+ 7‡	+ 5	+ 11‡	+ 15	+ 4	— 17‡	+ 8	— 4
1475		11.4	6 45	4.1	+ 0‡	— 5	— 32‡	— 17	— 22	— 36‡	— 17	— 28
1476	56°.451	10.2	6 40	2.9	— 45‡	— 7	+ 1‡	— 1	— 3	— 36‡	— 12	— 19
1477	56°.452	9.1	6 46	2.8	— 64	— 14	— 8	— 0	— 16	— 25	— 23	— 16
1479		11.6	6 43	56° 57′.4	— 12	— 5	— 5	— 26	— 17	— 17	— 7	— 19
1480	56°.450	10.5	6 20	54.4	— 10	+ 16	+ 17	— 33	— 10	— 14	+ 10	— 18
1481		12.9	6 47	51.9	— 13	— 14	— 6	+ 23	— 5	+ 2	— 10	+ 5
1482		12.5	6 49	51.0	— 2	— 0	— 12	— 29	— 11	+ 13	— 6	— 3
1483		12.8	6 33	40.3	+ 27	+ 41	— 3	+ 12	+ 3	+ 20‡	+ 15	— 14
1484		10.5	6 24	39.2	— 49	— 7	+ 6	— 6	— 7	+ 17	— 11	+ 5
1485		12.0	6 43	30.8	— 21‡	+ 22	+ 10	— 2	+ 35	+ 29	+ 5	+ 23
1486		14.0	6 42	23.4	+ 18‡	+ 5	— 7‡	+ 17	— 10	+ 19	+ 2	+ 11
1487		12.3	6 56	15.8	— 8‡	+ 17	+ 9‡	+ 12‡	+ 3	+ 20	+ 7	+ 14
1488		12.1	6 40	9.5	+ 20‡	+ 0	+ 36‡	+ 10‡	+ 14	+ 36‡	+ 23	+ 24
1489	55°.542	9.8	6 39	9.4	— 29‡	— 12	+ 29‡	+ 3‡	+ 0	+ 19‡	+ 4	+ 10
1490		12.4	6 35	7.4	+ 44‡	— 24	+ 33‡	+ 22‡	— 4	+ 48‡	+ 21	+ 28
1491		13.0	6 52	6.7	+ 39‡	— 37‡	+ 3‡	+ 31‡	+ 18	+ 42‡	+ 2	+ 33
1492	55°.543	9.1	6 41	6.2	+ 38‡	+ 0	+ 21‡	— 10‡	+ 0	+ 9‡	+ 1	+ 2
1493		13.5	6 59	2.4	+ 97‡	+ 3	+ 15‡	+ 28‡	+ 14‡	+ 17‡	+ 32	+ 19
1495	55°.544	9.8	6 50	0.6	— 33‡	— 7	+ 9‡	— 6‡	+ 3	+ 20‡	— 5	+ 9
	α = 2h 5m 43s to α = 2h 6m 19s.											
1496		9.0	2h 5m 43s	57° 13′.3	— 95‡	+ 4	+ 2‡	+ 13‡	— 33	— 44‡	— 22	— 27
1497		11.1	5 52	7.5	— 40‡	+ 24	— 18‡	+ 11‡	— 18	— 28‡	— 13	— 16
1498		12.2	6 9	5.9	— 1‡	+ 6‡	— 20‡	— 2‡	— 7‡	— 10‡	— 9	— 7
1499		12.5	6 5	2.6	— 8‡	+ 34	+ 1‡	— 9‡	— 25	— 24‡	+ 7	— 20
1500		12.7	5 48	0.4	+ 11‡	+ 13	+ 21‡	— 6‡	— 18	— 7‡	+ 16	— 9
1501		12.7	6 13	0.7	— 69	+ 0	— 35‡	+ 5‡	— 17	— 20‡	— 35	— 13
1502		11.8	5 53	56° 58′.1	+ 36	+ 11	+ 14‡	+ 28‡	— 4	+ 21‡	+ 19	+ 16
1503	56°.448	9.9	5 54	53.7	— 72‡	— 17	— 10‡	— 39‡	+ 4	— 13‡	— 27	— 15
1504		12.6	5 45	52.3	— 7‡	+ 4	+ 5‡	— 18‡	— 8	+ 0‡	+ 2	— 6
1506		13.1	5 54	50.9	+ 10	+ 32	+ 21‡	— 6‡	+ 5‡	+ 10	+ 21	+ 5
1507		13.1	6 12	50.4	+ 44	+ 44	+ 54‡	— 14	— 5	— 9‡	49	— 9
1508	56°.446	9.0	5 52	45.3	+ 94	+ 142	+ 145	+ 0	+ 1	+ 19	+ 131	+ 10
1509	56°.449	7.5	5 55	44.5	+ 210	+ 257	+ 280‡	— 208	— 206	— 221	+ 257	— 214
1510		12.2	5 48	43.0	+ 0‡	+ 2	— 6	— 22	— 10	+ 34	— 3	+ 9
1511		12.9	6 1	39.3	— 15	— 24	+ 13‡	— 33	— 11	+ 19	— 3	— 1
1512		12.7	6 11	38.3	+ 26	+ 13	+ 15‡	— 12	+ 19	+ 23	+ 17	+ 13
1513		12.8	5 48	37.0	+ 20‡	— 19	+ 16‡	+ 4	+ 15	+ 6	+ 8	+ 8
1514		12.0	6 2	26.0	— 7‡	+ 10	+ 35‡	+ 5‡	+ 16	+ 34‡	+ 18	+ 22
1515		10.7	6 3	23.3	— 11‡	— 13	+ 40‡	— 5‡	+ 16	+ 30‡	+ 14	+ 18
1516		10.2	5 56	22.1	— 8‡	— 14	+ 38‡	+ 19‡	+ 5	+ 31‡	+ 13	+ 21
1517			5 52	22.0	+ 26‡	— 5‡	+ 22‡	+ 37‡	— 14	+ 45	+ 16	+ 28
1518		10.5	6 16	20.1	— 32‡	— 11	+ 27‡	— 9‡	+ 14	+ 29‡	+ 3	+ 16
1519		11.9	5 51	18.7	+ 27‡	+ 0	+ 43‡	+ 5‡	— 1	+ 48‡	+ 28	+ 25
1520		12.6	6 6	15.1	+ 50‡		+ 55‡	+ 24‡	+ 28‡	+ 59‡	+ 53	+ 42
1521	56°.447	10.7	5 53	13.9	— 15‡	— 10	+ 29‡	+ 15‡	+ 6	+ 30‡	+ 8	+ 20

Reduction to absolute P.M.: Δ μ″α = — 0″.006; Δ μ″δ = + 0″.007.

No.	diameter	α			δ			α			δ			z	γ
		M₁	M₂	M₃	M₁	M₂	M₃	m₁	m₂	m₃	m₁	m₂	m₃		
1522	0ʳ.624	0ʳ.000	+ 0ʳ.103	− 0ʳ.250	− 0ʳ.056	+ 0ʳ.142	+ 0ʳ.088	+ 0″.016	+ 0″.002	+ 0″.031	0″.000	+ 0″.013	+ 0″.037	+ 49ᵖ.9	+ 26ᵖ.7
1523	0 .608	− 12	+ 114	− 204	− 22	+ 148	+ 104	+ 12	+ 7	+ 43	+ 22	+ 15	+ 40	+ 48.3	+ 30.1
	α = 2ʰ 5m 5s to α = 2ʰ 5m 47s.														
1524	0 .562	+ 50	+ 61		+ 87	+ 6		− 9	+ 20		+ 32	− 29		+ 55.8	− 28.9
1525	0 .763	− 57	+ 104	− 296	− 32	+ 48	+ 98	− 62	+ 42	+ 17	− 25	− 7	− 17	+ 52.9	− 27.8
1526	1 .091	− 171	+ 37	− 332	+ 19	+ 46	+ 102	− 113	+ 5	+ 16	− 2	− 11	− 10	+ 57.2	− 25.6
1527	0 .768	− 47	+ 41	− 330	+ 8	+ 38	+ 135	− 54	+ 9	+ 9	− 6	− 14	+ 3	+ 54.3	− 24.9
1528	0 .643	− 78	+ 66	− 342	+ 26	+ 55	+ 155	− 69	+ 20	+ 5	+ 2	− 6	+ 11	+ 53.9⁵	− 24.5
1529	1 .005	− 149	+ 32	− 330	+ 80	+ 73	+ 80	− 102	+ 2	+ 12	+ 29	+ 2	− 14	+ 54.8	− 23.8
1530	0 .762	+ 284	+ 343	+ 59	− 212	− 123	− 127	+ 112	+ 151	+ 154	− 115	− 95	− 83	+ 56.8	− 22.4
1531	0 .518	− 15	− 23	− 335	+ 36	+ 70	+ 171	− 36	− 25	+ 5	+ 8	+ 0	+ 25	+ 53.2	− 20.4
1532		− 27	+ 87	− 391	− 57	+ 86	+ 143	− 39	+ 25	− 9	− 38	+ 6	+ 18	+ 54.8	− 18.7
1533	0 .921	− 129	+ 50	− 359	− 28	+ 62	+ 99	− 85	+ 5	− 0	− 23	− 8	+ 10	+ 54.2	− 15.2
1534	0 .641	+ 31	+ 33	− 404	+ 20	+ 42	+ 109	− 6	− 4	− 18	+ 1	− 18	+ 16	+ 52.9	− 13.2
1535	1 .446	− 216	+ 85	− 257	− 18	+ 43	+ 123	− 123	+ 18	+ 45	− 19	+ 19	+ 24	+ 56.9⁵	− 11.7
1536	0 .724	− 84	+ 33	− 285	− 6	+ 84	+ 106	− 60	− 6	÷ 27	− 12	+ 1	+ 20	+ 54.3	− 11.0
1537	1 .357	− 145	+ 91	− 318	− 35	+ 85	+ 117	− 90	+ 22	+ 15	− 25	+ 1	+ 23	+ 53.9	− 10.9
1538	0 .613	− 13	+ 3	− 281	+ 36	+ 71	+ 140	− 21	− 24	+ 35	+ 9	− 7	+ 35	+ 56.4	− 8.9
1539	0 .524	− 12	+ 71	− 269	− 6	+ 53	+ 95	− 24	+ 12	+ 29	− 10	− 15	+ 18	+ 52.7	− 8.9
1540	0 .513	+ 77	+ 23	− 235	+ 20	+ 52	+ 96	+ 23	− 15	+ 44	+ 4	− 17	+ 23	+ 53.6	− 5.5
1541	0 .570	− 55	+ 86	− 269	− 19	+ 96	+ 166	− 38	+ 13	+ 38	− 16	+ 3	+ 50	+ 55.6	− 4.1
1542	0 .923	+ 42	+ 181	− 60	+ 27	+ 124	+ 108	+ 12	+ 57	+ 104	+ 12	+ 15	+ 35	+ 52.8	+ 0.8
1543	0 .544	− 80	+ 92	− 216	+ 44	+ 100	+ 79	− 48	+ 15	+ 48	+ 20	+ 3	+ 25	+ 52.5	+ 1.2
1544	0 .705	− 80	+ 115	− 273	+ 92	+ 123	+ 105	− 44	+ 22	+ 38	+ 42	+ 13	+ 35	+ 55.8	+ 1.9
1545	0 .887	− 149	+ 97	− 230	+ 62	+ 117	+ 102	− 81	+ 16	+ 46	+ 29	+ 11	+ 34	+ 53.4	+ 2.3
1546	1 .006	− 135	+ 13	− 238	− 16	+ 126	+ 59	− 60	− 37	+ 55	− 3	+ 10	+ 26	+ 57.2	+ 12.0
1547	0 .510	− 11	+ 42	− 195	+ 24	+ 113	+ 132	+ 1	− 23	+ 67	+ 18	+ 3	+ 52	+ 56.0	+ 13.4
1548	0 .768	− 36	+ 43	− 224	+ 12	+ 151	+ 99	− 10	− 23	+ 59	+ 13	+ 21	+ 41	+ 56.4	+ 14.0
1549	0 .532	− 13	+ 79	− 309	− 3	+ 121	+ 114	− 0	− 4	+ 22	+ 8	+ 7	+ 46	+ 54.1	+ 15.2
1551	0 .622	− 48	+ 30	− 252	− 10	+ 65	+ 113	− 13	− 31	+ 46	+ 7	− 21	+ 46	+ 55.3	+ 17.5
1552	0 .759	+ 13	+ 73	− 262	+ 25	+ 175	+ 77	+ 20	− 12	+ 45	+ 25	+ 31	+ 34	+ 55.9	+ 19.3
1553	0 .810	− 95	+ 73	− 268	+ 13	+ 159	+ 101	− 30	− 15	+ 43	+ 23	+ 22	+ 43	+ 55.6	+ 21.9
1554	0 .584	+ 100	+ 85	− 227		+ 125	+ 53	+ 62	− 5	+ 47		+ 6	+ 26	+ 52.6	+ 22.3
	α = 2ʰ 4m 31s to α = 2ʰ 5m 9s.														
1556	0 .606	+ 63	+ 58	− 329	+ 56	+ 70	+ 173	+ 10	+ 7	+ 22	+ 16	− 4	+ 33	+ 57.8	− 17.2
1557	0 .925	− 129	+ 44	− 299	+ 30	+ 115	+ 115	− 74	− 8	+ 42	+ 3	+ 13	+ 26	+ 60.4	− 9.2
1558	1 .125	− 190	+ 34	− 300	+ 19	+ 135	+ 99	− 99	− 17	+ 44	− 1	+ 20	+ 28	+ 60.9	− 3.7
1560	0 .816	− 4	+ 100	− 247	− 56	+ 85	+ 33	+ 2	+ 7	+ 54	− 26	− 9	+ 16	+ 57.7	+ 9.1
1561	1 .050	− 141	+ 38	− 329	+ 22	+ 120	+ 71	− 62	− 24	+ 25	+ 14	+ 7	+ 30	+ 57.6	+ 11.1
1563	2 .149	− 298	− 14	− 228	− 13	− 40	+ 119	− 176	− 19	+ 66	− 19	− 51	− 18	+ 61.8	− 31.8

No.	B.D. or Br.—St.	Mag.	1900.0 α	δ	α μ₁	α μ₂	α μ₃	δ μ₁	δ μ₂	δ μ₃	μ''α	μ''δ
1522		12.3	2h 6m 7s	56° 12'.6	+0".023‡	+0".006‡	+0".023‡	−0".007‡	+0".011	+0".025‡	+0".019	+0".013
1523		12.5	6 19	9.2	+19‡	+11	+35‡	+14‡	+13	+28‡	+25	+21
	α =2h 5m 5s to α = 2h 5m 47s.											
1524		12.8	2h 5m 15s	57° 7'.7	0‡	+19‡		+28‡	−30‡		+9	−1
1525		11.3	5 36	6.6	−53‡	+41	+8‡	−29‡	−8	−24‡	+1	−21
1526	56°.442	9.6	5 5	4.4	−103‡	+4	+6‡	−5‡	−12	−19‡	−22	−14
1527		11.3	5 27	3.7	−45‡	+8	0‡	−10‡	−15	−6‡	−9	−9
1528		12.2	5 29	3.3	−60‡	+19	−4‡	−2‡	+7	+2‡	−12	−1
1529		10.0	5 23	2.7	−93‡	+1	+3‡	+25‡	+1	−23‡	−21	−5
1530		11.3	5 8	1.3	+122‡	+151‡	+144‡	−118‡	+96‡	−93‡	+140	−100
1531		13.2	5 35	56° 59'.3	−26‡	−25	−4‡	+4‡	−1	+16‡	−15	+9
1532			5 24	57.6	−29‡	+25	−18‡	−42‡	+5‡	+8‡	−10	−5
1533		10.4	5 29	54.1	−75‡	+5	−9‡	−27‡	+9	0‡	−22	−9
1534		12.2	5 39	52.1	+4‡	−4	−27‡	−3‡	−19	+6‡	−13	−2
1535	56°.443	8.2	5 9	50.6	−112‡	+19	+35‡	−22‡	−21	+12‡	−6	−5
1536		11.6	5 29	49.9	−50‡	−5	+18‡	−16‡	0	+9‡	−5	0
1537	56°.445	8.5	5 32	49.8	−80‡	+23	+6‡	−29‡	0	+12‡	−11	−1
1538		12.4	5 14	47.8	−10‡	−23‡	+25‡	+5‡	−9‡	+23	+4	+10
1539		13.2	5 41	47.8	14	+13	+20‡	−14‡	−16	+7	+10	−4
1540		13.3	5 35	44.5	+33‡	−14	+35‡	0‡	−19‡	+11	+22	+1
1541		12.8	5 21	43.1	−27‡	+14	+29‡	−20‡	+1	+37‡	+11	+14
1542		10.4	5 42	38.2	+22‡	+59	+95‡	+7‡	+13	+22‡	+68	+16
1543		13.0	5 44	37.8	−38‡	+17	+39‡	+15‡	+1	+12‡	+14	+10
1544		11.7	5 21	37.1	−33‡	+24	+28‡	+38‡	+11	+21‡	+12	+23
1545		10.6	5 38	36.7	−71‡	+18	+37‡	+24‡	+9	+21‡	+5	+19
1546	56°.444	10.0	5 12	27.1	−50‡	+34	+45‡	−7‡	+7	+10‡	+1	+5
1547		13.3	5 21	25.7	+11‡	−20‡	+57‡	+13‡	+1‡	+37‡	+26	+22
1548		11.3	5 19	25.1	0‡	−20	+49‡	+8‡	+18	+26‡	+19	+19
1549		13.1	5 35	23.9	+10‡	−1	+12‡	+3‡	+5	+31‡	+8	+17
1551		12.3	5 27	21.6	−3‡	−28	+36‡	+2‡	−24	+31‡	+10	+10
1552		11.3	5 23	19.8	+30‡	−8	+35‡	+20‡	+28	+19‡	+23	+22
1553		11.0	5 25	17.2	−21‡	−11	+33‡	+18‡	+19	+28‡	+8	+23
1554		12.7	5 47	16.8	+71‡	−1	+38‡		+4	+12‡	+36	+9
	α = 2h 4m 31s to α = 2h 5m 9s.											
1556		12.5	2h 5m 2s	56° 56'.1	+21‡	+7‡	+11‡	+13‡	−6‡	+21‡	+12	+12
1557	56°.441	10.4	4 45	48.1	−62‡	−7	+30‡	+1‡	+11	+11‡	−2	+8
1558	56°.440	9.4	4 43	42.7	−87‡	+16	+32‡	−3‡	+17	+12‡	−10	+9
1560		11.0	5 8	30.0	+13‡	+10	+43‡	−30‡	−12	0‡	+27	−10
1561		9.7	5 9	28.0	−51‡	−21‡	+14‡	+10‡	+4	−14‡	−11	+10
1563	56°.438	6.3	4 31	57° 10'.4	−166‡	−20	+54‡	−21‡	−53	−27‡	−19	−32

Reduction to absolute P.M.: Δ μ''α = − 0".006; Δ μ''δ = + 0".007.